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PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, January 21st, 1926, at 8 p.m. In the absence of the President, the Chair was occupied by Prof. W. P. WYNNE, D.Sc., F.R.S., Vice-President.

Reference was made to the following deaths :

	Elected.	Died.
John Ernest Jewell	Dec. 7th, 1922.	Sept. 20th, 1925.
John Henry Village	Feb. 19th, 1925.	Sept. 22nd, 1925.

and the following announcements were made :

1. That the Council has received with sincere regret, as from the next Annual General Meeting, the resignation of Dr. Arthur W. Crossley from the office of President owing to ill-health. At its meeting this afternoon, the Council had passed the following resolution :

> " The Council, having received with great regret Dr. Crossley's wish to resign the Presidency at the close of his first year of office on the ground of ill-health, desires to express its sincere thanks for the services he has rendered as President and its best hope that his recovery may be speedy and complete."

2. That the names of the members of Council who retire at the Annual General Meeting on March 25th, 1926, and who are ineligible for re-election to the same office until after the lapse of one year, are as follows :

Vice-Presidents who have filled the office of President :

Sir William J. Pope and Sir James Walker.

Vice-Presidents who have not filled the office of President :

Prof. G. T. Morgan and Prof. J. M. Thomson.

Ordinary Members of Council :

(*a*) Town Member :
Dr. G. W. Monier-Williams.

(*b*) Country Members :
Prof. W. N. Haworth, Prof. C. K. Ingold, Dr. H. McCombie, and Prof. J. Reilly.

The following vacant places fall due to be filled at the Annual General Meeting to be held at the University of Manchester on Thursday, March 25th, 1926, at 4 p.m. :

President	One vacancy.
Vice-Presidents who have filled the office of President	Two vacancies.
Vice-Presidents who have not filled the office of President	Two vacancies.

Ordinary Members of Council :

(*a*) Town Members	One vacancy.
(*b*) Country Members	Four vacancies.

The Council has nominated Prof. H. Brereton Baker to the office of President.

The following letter has been received from Madame Mendeleév thanking the Council for financial assistance afforded from the Russian Fund Account, which is now closed :

LENINGRAD,
KATTARIN STR. 27,
December 25th, 1925.

DEAR SIR,

Herewith I thank you and the Chemical Society for the cheque I have just received.

The Chemical Society helped me in hard times and I hasten to express my sincere gratitude for all that the Chemical Society has done for me.

If ever I shall be in need of help, I hope you will allow me to address myself again to you.

With best thanks,
I remain,
Yours very truly,
ANNA MENDELEÉV.

S. E. CARR, Esq.

The following were formally admitted Fellows of the Chemical Society : E. A. Tricker, E. F. Gee, G. Jessop, S. Lenher, G. A. Elliott, S. Husain, H. W. Palmer, E. Britnell, E. B. Evans, L. J.

Chalk, H. F. Betts, R. F. Smith, C. H. L. Miller, and J. B. Murgatroyd.

Certificates were read for the first time in favour of :

Thomas Harvey Bailey, 40, Avenue Road, Highgate, N. 6.
George Henry Carter, 31, Horsforth Avenue, Bridlington.
Sydney George Clarke, B.Sc., A.I.C., 38, Durlston Road, Kingston.
William Joseph Elford, B.Sc., Ph.D., A.I.C., National Institute for Medical Research, Hampstead, N.W. 3.
Frederick Raine Ennos, B.A., B.Sc., A.I.C., 34, Carminia Road, Upper Tooting, S.W. 17.
Graham Charles Gibson, B.Sc., A.I.C., 14, College Square, Llanelly.
Antonius de Graaf, Philips' Glowlampworks, Eindhoven.
Richard Walter Hardacre, M.Sc., 17, Bright Street, Skipton.
Arthur Jacob Immins Harding, M.Sc., Ratcliffe House, The Fosse, Syston.
John Haslam, M.Sc., 6, Colwith Road, Hammersmith, W. 6.
Joseph Frederick Hirst, B.Sc., A.I.C., 3, Wolseley Gardens, Gunnersbury, W. 4.
Thomas Hodgkinson, B.Sc.Tech., Kululu, Temple Street, West Brunswick, Melbourne.
Charles Ambrose Kelly, 26, Gloucester Road, Tue Brook, Liverpool.
James Wallace Laing, 85, Polwarth Gardens, Edinburgh.
Percy Joshua Leaper, B.Sc., A.I.C., 207, Meadow Street, Nangatuck, Conn., U.S.A.
Philip Guy Marshall, 39, Prince's Avenue, Watford.
Leonard William Needham, M.Sc., 92, Greenfield Road, Harborne, Birmingham.
Millicent Emma Nottage, B.Sc., 162A, Hampton Road, Twickenham.
John Packer, M.Sc., Chemistry Dept., Imperial College of Science and Technology, S. Kensington, S.W. 7.
Jogesh Chandra Paul, B.Sc., Harababu's Ghat, Serampore P.O., Bengal.
Henry Grattan Pring, Slieve na Failte, Whiteabbey, co. Antrim.
George Henry Purvis, Mona Lodge, Usk.
Henry Mills Spittle, Hillfoot Bungalow, Church Street, Wednesbury.
Cyril James Allan Taylor, M.Sc., A.I.C., 7, Chetwynd Road, Wolverhampton.
James Walkden, 33, Hemming Street, Winnington, Northwich.
Kenneth Norman Welch, B.Sc., The Hollies, Westfield Drive, Gosforth.
George Ogilvie Wills, B.Sc., Ph.D., 1, Melbourne Terrace, Saltcoats.
William John Wilson, F.I.C., Fairlawn, Honor Oak Road, Forest Hill, S.E. 23.
William Ewart Wright, M.Sc., A.I.C., 54, Ash Street, Southport.

The following certificates have been authorised for presentation to ballot under Bye-Law I (2) :

James Miller Breckenridge, M.S., Ph.D., Vanderbilt University, Nashville, Tenn., U.S.A.
Hugh Martin Leake, Sc.D., M.A., Imperial College of Tropical Agriculture, St. Augustine, Trinidad.
L. S. Narayanaswamy, B.A., M.B., B.S., 2, Akbar Sahib Street, Triplicane, Madras.
Johan Pieter Wibaut, Org. Chem. Laboratorium, The University, N. Prinsengracht 126, Amsterdam.

The following papers were read :

" Studies of valency. Part VII. Surface polarity and the reaction of ethylene and chlorine. The effect of the adsorbed water layer." By R. G. W. NORRISH and G. G. JONES.

" A revision of the structural formula of glucose." By W. CHARLTON, W. N. HAWORTH, and S. PEAT.

" Dvi-manganese." By J. G. F. DRUCE and F. H. LORING.

" The nitration of benzamidines." By R. FORSYTH, V. K. NIMKAR, and F. L. PYMAN.

LECTURE.

Professor J. Barcroft's lecture entitled " Hæmoglobin " will be delivered in the Chemistry Theatre of University College, Gower Street, on Thursday, February 11th, 1926, at 8 p.m. Light refreshments will be provided in the College Refectory after the meeting.

ANNUAL GENERAL MEETING.

The Annual General Meeting will be held in the University of Manchester on Thursday, March 25th, 1926, at 4 p.m., the Dinner being held at the Midland Hotel, Manchester, the same evening at 6.30 for 7 p.m. Tickets, price 10*s.* 6*d.* each, for ladies or gentlemen (including gratuities but not including wine), can be obtained from Mr. L. B. Tansley, The Shirley Institute, Didsbury, Manchester.

List of papers, or abstracts thereof, received between December 17th, 1925, and January 21st, 1926. (This list does not include the titles of papers, or abstracts thereof, which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

" Preparation and reduction of methyleneanthrone." By E. de B. BARNETT and M. A. MATTHEWS.

" Studies on the Walden inversion. Part X. The reaction between water and the phenylchloroacetate and phenylbromoacetate ions." By A. M. WARD.

" The relative directive powers of groups of the forms RO– and RR′N– in aromatic substitution. Part I." By J. ALLAN and R. ROBINSON.

" The relative directive powers of groups of the forms RO– and RR′N– in aromatic substitution. Part II. The nitration of some 2-benzyloxyanisoles substituted in the benzyl group." By A. E. OXFORD and R. ROBINSON.

" The relative directive powers of groups of the forms RO– and

RR'N– in aromatic substitution. Part III. The nitration of some *p*-alkyloxyanisoles." By R. ROBINSON and J. C. SMITH.

"The relative directive powers of groups of the forms RO– and RR'N– in aromatic substitution. Part V. The nitration of phenyl *p*-methoxyphenyl ether." By T. R. LEA and R. ROBINSON.

"Investigations on the dependence of rotatory power on chemical constitution. Part XXVIII. *d*-β-Butylbenzene." By P. W. B. HARRISON, J. KENYON, and J. R. SHEPHERD.

"The chemistry of polycyclic structures in relation to their homocyclic unsaturated isomerides. Part VI. Some reactions of isophorone." By J. W. BAKER.

"The interaction of nitric oxide and hydrogen and the molecular statistics of termolecular gaseous reactions." By C. N. HINSHELWOOD and T. E. GREEN.

"Styrylpyrylium salts. Part VI. Styryl derivatives of 9-methylxanthylium chloride, and 3 : 6-dihydroxy-9-methylxanthylium chloride." By H. ATKINSON and I. M. HEILBRON.

"The arylsulphuric acids." By G. N. BURKHARDT and A. LAPWORTH.

"An automatic syphonic gas circulator." By G. M. GREEN.

"The reactivity of alkyl iodides with sodium benzyl oxide—a criticism." By L. J. GOLDSWORTHY.

"The velocities of the reactions between ethyl iodide and the sodium salts of various substituted phenols in ethyl-alcoholic solution." By L. J. GOLDSWORTHY.

"The molecular configurations of polynuclear aromatic compounds. Part V. The identity of the nitration products derived from 2 : 7- and 4 : 5-dinitrophenanthraquinones." By G. H. CHRISTIE and J. KENNER.

"The molecular configurations of polynuclear aromatic compounds. Part VI. β-Dinitrodiphenic acid; its constitution and resolution into optically active components." By G. H. CHRISTIE, A. HOLDERNESS, and J. KENNER.

"The conversion of berberine into β-homochelidonine (α-allocryptopine)." By R. D. HAWORTH and W. H. PERKIN.

"Tetrahydroacridine, octahydroacridine, and their derivatives. Part II. Resolution of the octahydroacridines (A) and (B)." By W. H. PERKIN and W. G. SEDGWICK.

"Orientating effects in the diphenyl series. Part I." By H. G. DENNETT and E. E. TURNER.

"The reciprocal salt pair (Na, Ba)–(Cl, NO_3) in aqueous solution at 20°." By A. FINDLAY and J. CRUICKSHANK.

"The electrometric titration of halides." By W. CLARK.

"Synthetical work on the *iso*quinoline alkaloids. Part I. Some substituted *o*-carboxyphenylethylamines." By G. A. EDWARDS.

"Synthetical work on the *iso*quinoline alkaloids. Part II. A method of opening the rings of cyclic ketones. By G. A. EDWARDS.

"Some unsymmetrically substituted dinitro- and diamino-derivatives in the stilbene and tolane series. Part II. The mode of addition of water to 3 : 4′-dinitro- and diamino-tolanes." By H. A. HARRISON.

"Elimination of the amino-group of tertiary amino-alcohols. Part III. A new method for the preparation of optically active ketones." By A. MCKENZIE, R. ROGER, and G. O. WILLS.

"10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part I. The synthesis, preparation, and some properties of 10-chloro-5 : 10-dihydrophenarsazine." By H. BURTON and C. S. GIBSON.

"10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part II. The action of primary chloroarsines on diphenylamine and its homologues." By H. BURTON and C. S. GIBSON.

"A comparison of the atomic weight of silicon from different sources." By P. L. ROBINSON and H. C. SMITH.

"The constitution of the oxidation products obtained by the action of chromyl chloride on the terpenes, as deduced from a new interpretation of the reaction." By J. SWORD.

"Studies on the dependence of optical activity on chemical constitution. Part VII. The absorption spectra of aryl derivatives of imino- and bisimino-camphor." By B. K. SINGH and R. RAI.

"The absorption spectra of various derivatives of salicyclic acid." By J. E. PURVIS.

"Synthesis of iodine compounds of the salvarsan group." By A. D. MACALLUM.

"Preparation of bromohydrin." By F. H. MCDOWALL.

"Investigations in the diphenyl series. Part I. Migration reactions." By F. BELL, J. KENYON, and P. H. ROBINSON.

"Experiments on the variation of the angles of crystals during growth." By E. S. HEDGES.

"Experiments on the synthesis of brazilin and hæmatoxylin and their derivatives. Part I. Veratrylidene-7-methoxychromanone and an account of a new synthesis of some benzopyrylium salts." By W. H. PERKIN, J. N. RAY, and R. ROBINSON.

"Synthesis of 7-methoxy-3-(6-bromohomopiperonyl)-2-methyl-1 : 4-benzopyrone." By W. BAKER.

"The resolution of *dl*-alanine and the formation of trans-2 : 5-dimethylpiperazine." By F. B. KIPPING and W. J. POPE.

"A study of the rule of conservation of substitution type in aromatic substances. Part I. The chlorination of 2-chloro-4-nitrotoluene." By W. DAVIES and G. W. LEEPER.

"The reactivity of meso-substituted anthracenes. Part I." By J. W. COOK.

"Derivatives of tetrahydrocarbazole. Part V. Carboxylic acids." By W. M. COLLAR and S. G. P. PLANT.

"The reduction of ethyl dibenzylacetoacetate." By E. S. HILL.

"The complexity of the solid state. Part III. The behaviour of pure sulphur trioxide. Part II." By A. SMITS and P. SCHOENMAKER.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, FEBRUARY 18TH, 1926.

N.B.—The names of those who sign from "General Knowledge" are printed in *italics*.

BAILEY, EDWIN MELHUISH, Almond Hill, Pumpherston, Midcalder. Scotch. Technical Chemist. Since 1898 I have been Chief Chemist with Pumpherston Oil Co., Ltd., engaged in manufacture of crude shale oil and its refining, and in the production of sulphate of ammonia, and at present am Chief Chemist with Scottish Oils, Ltd. (*Signed by*) A. E. Dunstan, R. G. Neilson, F. G. P. Remfry, Thos. A. Smith, S. F. Birch.

BAILEY, THOMAS HARVEY, 40, Avenue Rd., Highgate, N. 6. British. London Manager and Technical Chemist to Spurway & Cie, Ltd., Essential Oil Distillers, etc., Cannes-Grasse, France. Pharmaceutical Major qualification. For 17 years on staffs of the British Drug Houses, Evans, Sons, Lescher & Webb, and Burroughs Wellcome & Co. Have carried on a considerable amount of experimental work in connection with essential oils and synthetic products used in perfumery, and am desirous of utilising the literature, library, and lectures of the Society for furthering that work. (*Signed by*) John W. Patterson, Frank B. Arnold, Percy Barrs.

BAL, DATTATRAYA VISHWANATH, Nagpur, Central Provinces, India (at present at the Rothamsted Experimental Station, Harpenden, England). British (Hindu). Extra Assistant Director of Agriculture, C. P. (for research and lecture work on soil micro-biology at the Agricultural Research Institute and College, Nagpur). L.Ag. (with Honours). Medallist in Agricultural Chemistry and Research work in Agricultural Chemistry and Soil Microbiology. Published as follows: *Agric. Jour. India*, Vols. XV, XVI, XVII, and XX; *Jour. Agric. Science*, Vol. XV, No. 4, 1925. (*Signed by*) C. J. Russell, H. J. Page, R. P. Hobson, C. T. Gimingham.

BHATT, JANARDHANA RAM, Sri Sumangala College, Panadura, Ceylon.

Indian. Science Master. Was a teacher (Chief Science Master) for the last 3 years. A graduate of the National University, Madras. Preparing for the Calcutta M.Sc. (*Signed by*) J. P. C. Chandrasena, K. V. Rau, M. Parthasarathy.

BLAKEY, WILLIAM, jun., 14, Marshall Road, Cambridge. British. Research Student. Natural Science Tripos, Cambridge. Part I, First Class. Part II, Second Class. (*Signed by*) Hamilton McCombie, Harold A. Scarborough, John Dexter.

BROWN, BERNARD MEREDITH, Hill Close, Croham Manor Road, S. Croydon. British. Analytical Chemist. B.Sc. (Hons.). London. F.I.C. Sometime Assistant in War Department Laboratory, Woolwich Arsenal; Assistant in Government Laboratory, London; Assistant Quinologist, Bengal; now Assistant Chemist, Messrs. Whitbread & Co., Ltd., London. (*Signed by*) B. F. Sawbridge, L. Melville Clark, R. Leslie Collett.

CARTER, GEORGE HENRY, 31, Horsforth Avenue, Bridlington. English. Metallurgical Chemist. At present Head of Transport and Shipping Dept., Messrs. G. & T. Earle, Cement Manufacturers, Hull. 1st Class Practical, and 2nd Class Theoretical, Hons. Inorganic Chemistry (Certificate), Hull Technical College. Also 1st Class Practical, and 2nd Class Theoretical, Inorganic Chemistry Certificates, Stage II, Board of Education. 2nd Class Practical, and 2nd Class Theoretical, Advanced Organic Chemistry, Hull Tech. 2nd Class Practical Certificate, Stage II, Metallurgy, Board of Education. Chemist in the Laboratories of The Leeds Forgee Co., 12 years, and Messrs. G. & T. Earle, 4 years. (*Signed by*) Frank S. Wood, E. B. Atkinson, Edward Chapman, Harry Thompson.

CLARK, FREDERICK LESLIE, 170, Barnsley Road, Sheffield. English. Student at Sheffield University. Candidate for Hons. B.Sc. in Chemistry at end of present session. (*Signed by*) W. P. Wynne, G. M. Bennett, Arthur W. Chapman.

CLARKE, SYDNEY GEORGE, 38, Durlston Road, Kingston-on-Thames. English. Temporary Assistant Chemist, Government Laboratory, W.C. 1. B.Sc. London, 1st Class Hons. Chemistry. A.I.C. by election. Research in Organic Chemistry, Oct. 1923 to March 1924, under Dr. Kenyon at Battersea Polytechnic, S.W. 11. Assistant Chemist, Messrs. Riley, Harbord & Law, Consulting Metallurgists and Chemists, 16, Victoria St., S.W. 1, March 1924 to April 1925. Assistant Chemist, Research Dept., Woolwich, S.E. 18, April 1925 to Sept. 1925. (*Signed by*) Robert Robertson, Geo. Stubbs, J. Kenyon.

CLAYTON, HERBERT, The Dyson-Perrin Lab., South Parks Rd., Oxford. English. Research Student. Science Master (1922–25), Silcoates School, Yorks. B.Sc., M.A. (Oxon.). One year's research. Publications: "Preparation and Properties of the Aldehydo-benzoic Acids" (with N. V. Sidgwick), "Chlorination of the Toluic Acid Chlorides" (with W. Davies and W. H. Perkin), *J.C.S.*, Trans., Oct. 1922. (*Signed by*) W. H. Perkin, F. Lions, S. G. P. Plant, R. D. Haworth, John Rankin.

COLLIE, CARL HOWARD, New College, Oxford. English by birth. Winchester Scholar at New College, Oxford. Junior Demonstrator of Inorganic Chemistry in the Old Chemistry Department, Oxford. 1st Class Honours in the Honour School of Natural Science (Chemistry) of the University of Oxford, 1925. (*Signed by*) B. Lambert, Allan F. Walden, Frederick Soddy.

DOWNEY, WILLIAM ERIC, 32, Grasscroft Road, Huddersfield, Yorks. (permanent), Imperial College of Science and Technology, S.W. 7. British. Beit Scientific Research Fellow. Ph.D. London External, 1923. D.I.C., 1923. "The Relation between the Glow of Phosphorus and the Formation of Ozone," *J.C.S.*, 1924, **125**, 347; "A Spectroscopic Study of the Lumines-

cent Oxidation of Phosphorus," H. J. Emeléus, *J.C.S.*, 1924, **125**, 2491. (*Signed by*) H. B. Baker, H. J. T. Ellingham, J. N. Sugden.

ELFORD, WILLIAM JOSEPH, National Inst. for Medical Research, Hampstead, N.W. 3. British. Physical Chemist engaged in research work at National Inst. Med. Research, Hampstead. B.Sc. (1st Class Hons. Chemistry). Ph.D. of Bristol University. Colston Soap Research Fellow in Dept. Physical Chemistry, Bristol University, 1923–1925. A.I.C. "Equilibria underlying the Soap-boiling Processes. The System Potassium Oleate–Potassium Chloride–Water," by J. W. McBain and W. J. Elford (this paper has been accepted for publication by Chem. Soc., but as yet has not appeared in the Transactions). (*Signed by*) Harold King, Isidore E. Balaban, H. W. Dudley, H. C. Sayer.

ENNOS, FREDERICK RAINE, 34, Carminia Rd., Upper Tooting, S.W. 17. British. Analytical Chemist, Government Laboratory, London. B.A. (Cantab.). B.Sc. (London). A.I.C. 11 Years on staff of the Government Chemist. "The Analysis of Aluminium Alloys and Metallic Aluminium," by J. J. Fox, D.Sc., F.I.C., E. W. Skelton, B.Sc., A.I.C., and F. R. Ennos, B.A., B.Sc., *J.S.C.I.*, 1918, **37**, 328–333; "On the Structure and Composition of the Strathmore Meteorite," by W. F. P. McLintock, D.Sc., and F. R. Ennos, *Min. Mag.*, 1922, **19**, 323–329; "Determination of Iron in Ores and Silicate Rocks," by F. R. Ennos and R. Sutcliffe, M.A., Appendix VIII, Summary of Progress of Geological Survey, 1921; "Special Report on the Mineral Resources of Gt. Britain," by F. R. Ennos and A. Scott, M.A., D.Sc., Vol. XXVIII, "Refractory Materials." (*Signed by*) J. Carmichael, W. Williamson, J. J. Fox.

FAWCETT, REGINALD CLIFFORD, The Cottage, Pentre, Wrexham, Denbighshire. British. Student (Research). 1st Class Hons. B.Sc. (Man.). Carrying on research work under the direction of Prof. R. Robinson, F.R.S., at the Victoria University, Manchester. (*Signed by*) Arthur Lapworth, R. Robinson, Frederick Challenger.

FODOR, ANDOR, Professor, Ph.D. Jerusalem, Palestine. Jewish, German subject. Head of the Institute of Biological and Colloidal Chemistry, Hebrew University, Jerusalem. *Berichte d. Deutsch. Chem. Gesel.*, **42**, 2573–2574 (1909), Eug. Bamberger und A. Fodor, "Ueber *o*-Nitrosobenzaldehyd." *Zeitsch. f. d. gesam. Schiess-u. Sprengstoffwesen*, **5**, 1–14 (1910), "Ueber Stickstofffreie Abbauprodukte u.s.w.," E. Berl und A. Fodor. *Ibid.*, **5**, 1–23 (1910), "Ueber Stickstoffhaltige Abbauprodukte u.s.w.," E. Berl und A. Fodor. *Berichte d. Deutsch. Chem. Gesel.*, **43**, 3321–3335 (1910), Eug. Bamberger und A. Fodor, "Bildungsweisen des *o*-Nitrosobenzaldehydes," and others. (*Signed by*) Ch. Weizmann, Robert Mond, C. H. Spiers.

FORSYTH, JOHN CHARLES, 62, Worcester St., Christchurch, New Zealand. British. Chemist. Senior Assistant Chemist, Chemical Laboratory of New Zealand Refrigerating Co., Ltd. Chemistry Student of Canterbury College, 1921–23. (*Signed by*) A. M. Wright, H. G. Denham, George Gray.

GIBSON, GRAHAM CHARLES, 14, College Square, Llanelly, Carm. British. Schoolmaster. Class II, Division I, Honours in Chemistry. B.Sc., Wales. Associate of the Institute of Chemistry of Great Britain. Past Student Demonstrator in Chemistry at Univ. Coll., Cardiff. (*Signed by*) W. J. Jones, E. P. Perman, A. A. Read.

GRAAFF, ANTONIUS DE, Library Department of Philips' Glowlampworks, Eindhoven, Holland. Dutch. Chemical Engineer of Philips' Glowlampworks, Ltd. The candidate is desirous of becoming a member of your Society, because in his quality of a chemical engineer of a Glowlampworks he is much

interested in the proceedings of your Society. (*Signed by*) A. Smits, W. A. Frederikse, J. C. Hartogs.

GYI, KO KO, Agricultural College, Mandalay, Burma. Burman. Assistant Director of Agriculture (Bacteriology), since 1st April, 1925. Assistant to the Agricultural Chemist, Mandalay, Burma. "Prussic Acid on Burma Beans," published by the Agric. Research Institute, Pusa, India, Bulletin No. 79. Undergone a full research course of training in Agricultural Bacteriology at the Agric. Research Institute, India. (*Signed by*) Moung Thein Kin, Nagendra Prasad, Moung Ba San.

HARDACRE, RICHARD WALTER, 17, Bright St., Skipton-on-Craven. English. Research Student. Student in Colour Chemistry, Leeds University, 1920-6. B.Sc. (Hons.), 1924. M.Sc., 1925. (*Signed by*) A. G. Perkin, R. B. Forster, W. Lowson.

HARDING, ARTHUR J. I., Ratcliffe House, The Fosse, Syston, nr. Leicester. British. Late Research Student. B.Sc. with Honours in Chemistry, June 1924. Master of Science, Dec. 1925. Sept. 1924 to Oct. 1925, Research on Bromine Compounds of Tervalent Molybdenum (paper not yet published). (*Signed by*) G. T. Morgan, W. N. Haworth, Wm. Wardlaw.

HARRIS, HERBERT, 1, Royal York Villas, Clifton, Bristol. British. Research Assistant in the Physical Chemistry Department, University of Bristol. A.R.C.S., B.Sc., Ph.D., D.I.C. Spent over two years at the Imperial College in post-graduate research in Physical Chemistry. 1925, 127, 1049. (*Signed by*) James C. Philip, J. W. McBain, M. Nierenstein.

HASLAM, JOHN, (Home address) 15, Dorset St., Burnley. (Present address) 6, Colwith Rd., Hammersmith, W. 6. British. Temporary Assistant Chemist, Govt. Lab. 3½ Years as Articled Pupil of R. St. G. Ross, F.I.C., Borough Analyst, Burnley. Graduated as B.Sc. (Honours Chem.), Manchester, 1923, as M.Sc., 1924. 2 Years' research experience under F. Challenger, Esq., D.Sc. 2 Years Lecturer and Demonstrator in Org. and Inorg. Chem., Burnley Technical College. Joint author of Paper on "The Sulphur Compounds of Kimmeridge Shale Oil," January 1925. (*Signed by*) Robert Robertson, Geo. Stubbs. Arthur Lapworth, Frederick Challenger, John F. Wilkinson, Raymond Ross.

HEAP, TOM, "Birch Mount," Church Rd., New Mills, nr. Stockport. British. Research Student in Chemistry at Manchester University. B.Sc. (Hons. Chem.), Manchester, 1924. (*Signed by*) Robert Robinson, Arthur Lapworth, Frederick Challenger.

HIRST, JOSEPH FREDERICK, 3, Wolseley Gardens, Gunnersbury, W. 4. British. Temporary Assistant Chemist, The Government Laboratory, Clements Inn Passage, Strand. B.Sc. (1st Hons. Chem.), London. Associate of the Institute of Chemistry. (*Signed by*) J. J. Fox, T. H. Bowles, A. G. Francis.

HODGKINSON, THOMAS, "Kululu," Temple St., W. Brunswick, Melbourne. British. Investigator, "Pulp and Paper Section" of the Commonwealth Institute of Science and Industry, Melbourne. B.Sc. Tech. All data obtained by the officers of the above Institute is published periodically in the form of Bulletins by the Director, and *not* privately. (*Signed by*) Frank Lee Pyman, John K. Wood, F. M. Rowe.

JOHNSON, STANLEY BARKER, c/o Colombo Gas and Water Co., Ltd., Gas Works, Colombo, Ceylon. British. Engineer and General Manager to the above Company (Gas, Water, and Chemical Works). Ordinary and Honours Medallist (Bronze and Silver, First Prizeman) in "Gas" City and Guilds London Inst., 1910 and 1911, respectively. Lecturer in Gas at Hull Technical

College, 1912–14. Queen's Jubilee Prizeman for Hull, 1913–14, for research paper entitled "Investigations on the Determination of Sulphur and Nitrogen in Coal, Coal Gas, and Sulphate of Ammonia." Ordinary and Honours Certificates (B. of Ed.) in Pure and Applied Chemistry. Designed and engineered all the various carbonising and chemical improvements at the Colombo Gas Works since being Manager to the Company in 1919. (*Signed by*) H. James Yates, H. Hartley, John Wm. Biggart, Arthur Forshaw.

JUPP, LEONARD GEORGE, 6, Chesham Rd., Kemp Town, Brighton. British. Post Graduate Student (full time) at Imperial College, Royal College of Science. A.R.C.S. in Chemistry. B.Sc. (2nd Class Hons.) in Chemistry. Taking a course of research in Organic Chemistry. (*Signed by*) H. B. Baker, Jocelyn Thorpe, M. A. Whiteley.

KELLY, CHARLES AMBROSE, 26, Gloucester Rd., Tue-Brook, Liverpool. British. Analytical Chemist. Assistant Chemist, Analyst's Laboratory, five years (Messrs. Huson and Hardwick, Analysts and Assayers). Assistant Chemist, Oil Works Laboratory, two years (C. C. Wakefield & Co., Ltd.). (*Signed by*) George Tate, George S. Irving, Andrew J. Myles.

KLEIN, RALPH HARRY, 11, Park Place Villas, Maida Hill, W. 2. English. Analytical Chemist with May & Baker, Ltd., Manufacturing Chemists. Associate of the Institute of Chemistry, Oct. 1925. (*Signed by*) Arthur J. Ewins, R. W. E. Stickings, George Newbery, A. Haythornthwaite, Wm. H. Simmons.

LAING, JAMES WALLACE, 85, Polwarth Gardens, Edinburgh. British. Chemist. Member of the Pharmaceutical Society. Employed by Messrs. T. & H. Smith, Ltd., Blandfield Chemical Works, Edinburgh, in various manufacturing processes. Author of "Plant Products," published in *Pharmaceutical Journal*, 21/6/24. (*Signed by*) A. Scott Dodd, G. F. Merson, William Duncan.

LEAPER, PERCY JOSHUA, 207, Meadow Street, Nangatuck, Connecticut, U.S.A. British. Organic Research Chemist with the Nangatuck Chemical Co., Nangatuck, Conn., U.S.A. B.Sc. (Lond.), 2nd Class Hons. A.I.C. (by examination). Two years as private Analytical and Consulting Chemist in Southampton, England. One year as Analytical and Research Chemist with the Tidewater Oil Co., U.S.A. (*Signed by*) D. R. Boyd, A. E. Clarence Smith, D. R. Snellgrove.

MARSHALL, PHILIP GUY, 39, Prince's Avenue, Watford. British. Schoolmaster (since Sept. 1925). 1 Year's Research work for Medical Research Council. 1 Year's Research work with Prof. C. K. Ingold, F.R.S. (*Signed by*) C. K. Ingold, A. G. Perkin, Arthur Smithells.

MAYES, HORACE ALFRED, "The Cottage," Sewage Works, Vicarage Lane, East Ham, E. 6. English. Student at East London College for 2 years. Awarded First Class Honours in Chemistry at London University Final B.Sc. examination. At present engaged on Research Work at E. L. C. (*Signed by*) J. R. Partington, E. E. Turner, E. Roberts.

NAYAR, ANKARATH SANKUNNI MANNADI, Madras. Indian. Professor of Biochemistry, Medical College, Madras. M.B., B.S. (Madras). Ph.D. (Edin.). Subjects for the thesis being (i) Non-cystein Sulphur of Proteins. (ii) (Some new facts about) The Coenzyme of Urease (under Prof. G. Barger, M.A., D.Sc., F.R.S., was the work done). (*Signed by*) Clive Newcomb, George Barger, Ellen Stedman.

NEEDHAM, LEONARD WILLIAM, 92, Greenfield Rd., Harborne, Birmingham. English. Research Student and Teaching Scholar, Birmingham University. Master of Science (Birmingham, 1925). (*Signed by*) W. N. Haworth, C. E. Wood, Wm. Wardlaw.

NOTTAGE, MILLICENT EMMA, 162*a*, Hampton Rd., Twickenham. British. Research Worker, D.S.I.R. B.Sc., Chemistry Hons., London, 1st Class. (*Signed by*) L. L. Bircumshaw, Guy Barr, I. H. Hadfield.

ORDISH, HENRY GEOFFREY, "Chilcombe," Milton Rd., Harpenden, Herts. British. Present occupation: Chemical Research in University Labs., Cambridge. Hons. B.A., Cambridge, Tripos Part II in Chemistry, Class II. (*Signed by*) W. J. Pope, W. H. Mills, J. B. Whitworth.

PACKER, JOHN (During 1926) Chemistry Dept., Imperial College of Science and Technology, South Kensington, S.W. 7; (usual address) Canterbury College, Christchurch, New Zealand. British. Lecturer in Chemistry, Canterbury College (Univ. of N.Z.), Christchurch, New Zealand. M.Sc. (First Class Hons. in Chem.), Melbourne. Dixon Research Scholar (Melbourne). Associate of Australian Chemical Institute. 1922 Assistant Chemist in large-scale technical investigation of special method of carbonising bituminous coal, results published in *J.S.C.I.*, 1925, **44**, 519r; "Carbonisation Research in Australia," by R. E. Thwaites and J. Packer. 1922 Tutor in Chemistry, Queen's College, Univ. of Melbourne. Temporary Research Chemist, Defence Dept., Melbourne. Since 1923 Lecturer in Chem., Canterbury College, Univ. of N.Z. Unpublished yet, "Phase Rule Research on Systems BaI_2–H_2O, BaI_2–I_2–H_2O. At present doing research work at Imperial College (Organic Chem.). "Capritartrates," by J. Packer and I. W. Wark, Trans., **119**, 1348. Sent for publication, "An Improved Hydrogen Sulphide Generator," by H. G. Denham and J. Packer. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, M. A. Whiteley.

PAUL, JOGESH CHANDRA, B.Sc., Harababu's Ghat, Serampore P.O., Bengal, India. Bengalee. Assistant Chemist to the East India Chemical Works Co., Victoria Road, Barnagore, Bengal, India. B.Sc. (with distinction) of the Calcutta University (India). I am desirous of keeping in touch with the modern developments in Chemistry. (*Signed by*) Tin Kari Ghose, Anu Ghose, Profulla Kumar Banerjee.

PHILLIPS, MONTAGUE ALEXANDRA, 31, Cator St., S.E. 15. British. Research Chemist in employ of Messrs. May and Baker, Ltd., Bell Lane, Wandsworth, S.W. A.I.C. (examination, Sept. 1925). Desire to receive Journal and Abstracts and to keep in touch with developments in Chemistry. (*Signed by*) Arthur J. Ewins, George Newbery, J. Kenyon, Harold Hunter.

PILLAI, DEVASIKHAMANI SUNDERAVELU, 37, Hill Street, Stoke-on-Trent. Jaffnese, Hindoo, British Subject. Govt. of India, State Tech. Scholar. Member of Society of Chem. Industry and Ceramic Society. Proficiency Certificate from Indian Inst. of Science, where carried out the following investigations: Magnesium–Oxychloride and its Industrial Application, and Preliminary Research on the Action of Bacteria on Cement. Hold Pottery Certificate on following grades: Prelim., Ordinary, and Advance Pottery from the Central School of Science and Technology, Stoke-on-Trent. Factory research on leadless glazes at Messrs. Sampson, Bridgwood & Son, Longton, Stoke-on-Trent, 1923–1924. Carrying on research work on Ceramic Colours. (*Signed by*) J. W. Mellor, H. V. Thompson, F. H. Clews.

PINKUS, ARNOLD, 238, Amhurst Rd., Stoke Newington, N. 16. Russian. Chemist at Heppells. Student of Charkov University (Russia), also College of Charkov. I desire to keep in touch with the new scientific discoveries of chemistry and to make use of the Library. (*Signed by*) Hartley Shaw, J. Cofman-Nicoresti, G. Cofman-Nicoresti.

PRICE, WILLIAM BENNETT, The Laurels, Woolwich Road, Belvedere, Kent. British. Research Student at King's College, London. B.Sc. in Chemistry,

2nd Class Honours. Engaged in Organic Research at K.C.L. with a view to proceeding to the degree of Ph.D. (*Signed by*) Samuel Smiles, H. W. Cremer, A. J. Allmand, Arthur Fairbourne.

PRING, HENRY GRATTAN, Slieve na Failte, Whiteabbey, Co. Antrim. British. Chairman and Governing Director, Grattan & Co., Wholesale and Retail Manufacturing Chemists and Aerated Water Manufacturers, Belfast. President, Employers' Federation of Pharmaceutical Chemists, Ireland. Vice-President, Ulster Drug Trade Association. Member of Council, Pharmaceutical Society of Northern Ireland. Member of Executive Council, Pharmacists of Northern Ireland. Member, Belfast Chamber of Commerce (Chemical Section). No published papers in Chemical Society. In order to keep in touch with current advances in Chemistry, particularly in relation to Pharmacy and Medicine. (*Signed by*) D. Hughes J. F. Ward, Henry Wren, Theophilus Harper, D. P. Woosley, W. W. Jones, P. J. Thompson.

PURVES, CLIFFORD BURROUGH, Edenbank, Cupar, Fife. British. Research Student in Chemistry. B.Sc. Degree. First Class Honours in Chemistry. Second Class Honours in Mathematics and Natural Philosophy. Two years' experience of Research in the Carbohydrate Group. "The Structure of the Normal Monosaccharides," Hirst and Purves, T., 1923, 1352. (*Signed by*) J. C. Irvine, John Read, Geo. J. Robertson.

PURVIS, GEORGE HENRY, Mona Lodge, Usk. British. Vice-Principal, Mon. Agricultural Institution, Usk, and Assistant Agricultural Organiser for Monmouthshire. 1911–1913, Assistant Lecturer Agric. Science, Hampshire Farm School; 1914–1923, Senior Lecturer Agric. Science, Mon. Agric. Institution; 1923 to date, Vice-Principal and Assistant County Organiser. (*Signed by*) C. W. Walker-Tisdale, Geo. R. Thompson, G. W. Robinson, T. W. Fagan.

RAY, CHARLES AYLMORE, 47, Somerford Grove, Tottenham, London, N. 17. British. Member of the Laboratory Staff of the Tottenham District Light, Heat, and Power Company, Tottenham, London, N. 17. Bachelor of Arts of Cambridge University; studied Principles of Chemistry, Applied Chemistry, Metallurgy, and Mineralogy. Research Student at the Northern Polytechnic Institute, Holloway. Member of the Society of Chemical Industry. (*Signed by*) T. J. Drakeley, G. J. Avey, S. A. Hurren.

ROGERS, IVY WINIFRED ELIZABETH, 8, St. Lawrence Road, W. 10. English. Honours Chemistry Student. (*Signed by*) J. F. Spencer, H. Crompton, E. R. Levy.

RUSSELL, RONALD STANLEY, 47, Redington Road, Hampstead, N.W. 3. British. Student in Chemistry. Graduate of the University of Cambridge in Natural Science Tripos, Part I. (*Signed by*) W. J. Pope, W. H. Mills, Eric K. Rideal, I. J. Faulkner.

SCHAFFER, ROBERT JOHN, 3, Hambalt Road, S.W. 4. British. Scientific Assistant, H.M. Building Research Station. B.A. (Oxon.). B.Sc. (Oxon.). Sometime Demonstrator in Chemistry in the University of Oxford. (*Signed by*) B. Lambert, N. V. Sidgwick, E. J. Bowen, E. Hope, C. H. Hinshelwood.

SHAH, MADHAVLAL SUKHLAL, 22, Oxford Road, Putney, London, S.W. 15 (Gujarat College, Ahmedabad, India). Hindu (India). Research Student at the Imperial College of Science. Designation in India at present: Assistant Lecturer in Chemistry, Gujarat College, Ahmedabad, India. M.Sc. (distinction) of the Bombay University, India. Carrying on Research and Lecturing work in Chemistry since 1920 (India), and have contributed two papers under joint names in the Journal of the Chemical Society, *J.C.S.*, 1923, **123**, 1982; *J.C.S.*, 1923, **123**, 1986. (*Signed by*) H. B. Baker, James C. Philip, H. J. Emeléus.

SMITH, EDNA CLARK, 9, Gilston Rd., S.W. 10. British. Biochemical Research Student at the Lister Institute. 2nd Class Hons. B.Sc. Chem. (Lond.), 1925. (*Signed by*) Arthur Harden, A. L. Stern, J. C. Crocker, Charles Dorée.

SPITTLE, HENRY MILLS, Hillfoot Bungalow, Church St., Wednesbury, Staffs. British. Student at Birmingham University. At present in the Honours School of Chemistry. Have qualified for a 1st Class Degree with Distinction in Chemistry, Tertius Collins Prize in Metallurgy (Birmingham Univ.). (*Signed by*) C. E. Wood, Wm. Wardlaw, M. Badia.

STROUTS, CHARLES RICHARD NOËL, Westminster Bank, Kew Gardens, Richmond. British. Research Chemist to Messrs. Elliott & Sons, Ltd., Barnet. B.A. (Oxon.). B.Sc. (Oxon.). A.I.C. "Halogen-substituted 1-Aryl Pyrazolones" (Chattaway and Strouts), *J.C.S.*, 1924, **125**, 2423. (*Signed by*) F. D. Chattaway, S. G. P. Plant, W. H. Perkin.

SUTTON, SIDNEY DAVID, 2, Glasshouse St., W. 1. English. Analytical Chemist (Rubber). Chief Works Chemist, Vultex Products, Ltd. Abbey Road, Park Royal, N.W. 10. Member of Institution of the Rubber Industry. (*Signed by*) Philip Schidrowitz, T. J. Drakeley, C. H. Birkitt.

TAYLOR, CYRIL JAMES ALLAN, 7, Chetwynd Rd., Wolverhampton. British. Research Chemist, Messrs. Thornley and Knight, Ltd., Birmingham. M.Sc. (Birm.). A.I.C. Published work: *J.C.S.*, 1924, **127**, 797; 1924, **127**, 2620; also paper on "Keto-Enol Isomerism of Ethylene-bis-acetylacetone," at present in the press. (*Signed by*) G. T. Morgan, C. E. Wood, Wm. Wardlaw.

TAYLOR, FRANK SHERWOOD, Birch Cottage, 21, Shortlands Rd., Shortlands, Kent. British. Schoolmaster. M.A. (Oxon.) in Chemistry. Four years responsible Chemistry Master at Maidenhead County Boys' School. Now at Wyggeston Boys' School, Leicester. Awarded B.Sc. for research on Greek Alchemy, pursuing subject for Ph.D. London. (*Signed by*) W. H. Perkin, B. Lambert, M. P. Applebey, E. G. J. Hartley, N. V. Sidgwick.

TAYLOR, RAYMOND, St. Brelades, Woodside Road, Parkstone, Dorset. British. Research Chemist. M.A. (Cantab.). B.Sc. (Oxon.). Research Chemist, 1919–1921, Messrs. Albright & Wilson, Oldbury. Research on Chlorination of Methane for Department of Scientific and Industrial Research, 1921–1925. (*Signed by*) Wm. T. Thomson, R. V. Eaton, E. W. Blair.

THOMAS, RICHARD VICTOR, 17, Pretoria Road, Cambridge. British. Research Student. First Class in Natural Sciences Tripos, Part I and Part II (Chemistry), at the University of Cambridge. Shuttleworth Research Student in Chemistry, Gonville and Caius College, Cambridge. (*Signed by*) W. J. Pope, W. H. Mills, W. J. V. Ward.

THOMPSON, GEORGE ERNEST, 7, Campbell Rd., Bow, E. 3., British. Assistant Gas-works Chemist (Stepney Branch, Commercial Gas Co.). Intermediate Science Exam., 1923 (University of London). 10 Years works experience. Certificates for Gas Engineering and Tar Distillation from City and Guilds of London. (*Signed by*) H. F. Hills, P. C. L. Thorne, Henry J. S. Sand.

TOWN, BERNARD WILLIAM, 79, The Grove, Hammersmith, W. 6. English. Engaged in Biochemical Research at Imperial College of Science and Technology. B.Sc. (2nd Class Honours in Chemistry), London. A.R.C.S. (2nd Class) in Chemistry. (*Signed by*) S. B. Schryver, James C. Philip, G. A. R. Kon.

TRIKOJUS, VICTOR MARTIN, Queen's College, Oxford. British. Research Student in Organic Chemistry at Dyson Perrins Laboratories, Oxford. B.Sc. (Sydney) with 1st Class Hons. Organic Chemistry (1924). Engaged there

(Sydney) on Research work in various subjects for 18 months (work as yet unpublished). (*Signed by*) R. D. Haworth, Fredk. A. Mason, S. G. P. Plant, Francis Lions.

WALKDEN, JAMES, 33, Hemming Street, Winnington, Northwich, Cheshire. British. Ph.D. Student. At present engaged in Research work with Dr. F. Challenger on Heterocyclic Compounds. Joint authorship, with G. N. Burkhardt and A. Lapworth, of a paper on "Polarity Theories and Four-membered Rings," *J.C.S.*, 1925, **127**, 2458. (*Signed by*) Arthur Lapworth, Frederick Challenger, G. N. Burkhardt, D. H. Bangham, John F. Wilkinson, J. E. Myers.

WATSON-WILL, CLAUDE STANLEY, Station Road, Indooroopilly, Brisbane. English. Pharmaceutical Chemist. Member of the Pharmaceutical Soc. of Gt. Britain. Late Lecturer and Examiner of King Edward VII Medical College, Singapore, 1918 to 1921. (*Signed by*) H. Lucas, David J. Williams, A. Thomas.

WELCH, KENNETH NORMAN, "The Hollies," Westfield Drive, Gosforth, Newcastle-on-Tyne. British. Now doing Research work for Degree of Ph.D. B.Sc. with 2nd Class Honours. Awarded Friere-Marreco Medal and Prize and Saville Shaw Medal (1925). (*Signed by*) G. R. Clemo, H. V. A. Briscoe, M. G. Thomson, G. C. Leitch.

WILKINS, HENRY, 13, Kinfauns Road, Goodmayes, Essex. British. Assistant Schoolmaster (Secondary). Teaching Chemistry at Raine's Foundation School for Boys, Arbour Sq., E. 1. B.Sc. (Lond., Pass Intl. 1912), Chemistry, Mathematics, Physics. B.Sc. (Lond., Hons. Chemistry, Intl. 1924, 2nd Class). Chemist on Nitration Plants and later Chemist-in-Charge Schröder-Grillo Plant for Dept. of Explosives Supply (Oct. 1915 to Dec. 1918). Joint author of the following papers in the *J.C.S.*: (*a*) "The Parachor and Chemical Constitution. Part I. Polar and Non-polar Valencies in Unsaturated Compounds," 1925, **127**, 1525. (*b*) "The Parachor and Chemical Constitution. Part III. Orientation Isomerism in Aromatic Compounds" (in the press, proofs received). (*Signed by*) Samuel Sugden, Cyril M. Willcox, E. J. Warren.

WILLIAMS, IDRIS, 19, Silver Street, Cambridge. British. Student of Chemistry. Graduate of the University of Cambridge in Natural Sciences. (*Signed by*) W. J. Pope, W. H. Mills, Eric K. Rideal, I. J. Faulkner.

WILLS, GEORGE OGILVIE, 1, Melbourne Terrace, Saltcoats, Ayrshire. British. Chemist with Nobel's Explosives Co., Ltd. B.Sc., Ph.D. (St. Andrews). "Conversion of Amino-acids into Tertiary Amino-alcohols," McKenzie and Wills, *J.C.S.*, 1925, **127**, 283. (*Signed by*) Alex. McKenzie Nellie Walker, Norman Picton, Bertram Campbell.

WILSON, WILLIAM JOHN, Fairlawn, Honor Oak Road, Forest Hill, S.E. 23. British. Research Chemist. Fellow of the Institute of Chemistry. Associate of City and Guilds of London Institute. Head of Research Department, The Burmah Oil Co., Ltd. Author (with A. Campbell) of "Paraffin Wax and its Manufacture," *J. Inst. Petroleum Tech.*, 1919, **5**, 106; (with B. C. Allibone) of "Studies on Lubricating Oils, Parts I, II, and III, *J. Inst. Petroleum Tech.*, 1925, **11**, 177. (*Signed by*) Robert Redwood, A. E. Dunstan, Ernest C. Craven.

WOOLF, HENRY, P.O. Box 14, Broken Hill, Northern Rhodesia. British. Technical Chemist. Trained at the East Ham Technical College. Six years course of Pure Chemistry (Organic and Inorganic) and Applied Chemistry. Two years course of Coal Tar Dyes and Colouring Matters. One year's course of Oils, Fats, and Waxes. One year Soap Manufacture. One year Physical

Chemistry. One year Chemical Engineering. At Sir John Cass Institute, one year Study Microbiology, also Metallurgy and Assaying. Ten years' practical work as an Analytical and Manufacturing Chemist in Paint, Lubricating Oil and Grease, Petroleum Distilling, Heavy and Fine Chemical Works, *e.g.* with Messrs. Alex Duckham & Co., Ltd.; Burrell & Co., Ltd.; Glico Petroleum, Ltd.; Gross, Sherwood, and Heald, Ltd.; The Chemical Supply Co. Member of the Oil and Colour Chemists' Association. (*Signed by*) E. D. Griffiths, W. T. Clough, Harold Toms.

WRIGHT, REGINALD FRANK, "Fairhazel," Avondale Road, Hove, Brighton. British. Research Student. A.R.C.S. (Chemistry, 2nd Class). I am still a student at the Royal College of Science, South Kensington, S.W. 7. I have not yet published any papers. (*Signed by*) G. A. R. Kon, E. H. Farmer, R. F. Hunter.

WRIGHT, WILLIAM EWART, 54, Ash Street, Southport. British. Research Chemist. B.Sc. (2nd Class Hons. Chemistry), London. M.Sc. (London), A.I.C. Reasons for desiring to join the Society: To keep in touch with the progress and advancement of Chemistry. (*Signed by*) Samuel Smiles, Arthur Fairbourne, Arthur John Allmand.

Certificates have been accepted by the Council under Bye-Law I (2) in favour of the following:

BRECKENRIDGE, JAMES MILLER, Nashville, Tenn. American. Professor of Chemistry, Vanderbilt University. 10 Years as Technical Chemist in Industry. 10 Years' University teaching experience. M.S. and Ph.D., University of Wisconsin. Reference, see "American Men of Science, 1924–25." (*Signed by*) J. P. Longstaff.

LEAKE, HUGH MARTIN, Sc.D., M.A., F.L.S., St. Augustine, Trinidad. British. Principal of the Imperial College of Tropical Agriculture. (*Signed by*) James P. Ogilvie.

NARAYANASWAMY, L. S., Madras. Hindu, Brahmin. Registered Medical Practitioner, No. 2, Akbar Sahib St., Triplicane, Madras. (i) Passed the B.A. degree and M.B. and B.S. degrees of the Madras University (B.A., M.B., B.S.). (ii) Has finished the Laboratory work in Public Health Chemistry, *i.e.* Analysis of H_2O, Food Supply, Beverages, Sewage, Disinfectants, etc. (*Signed by*) T. S. Natrajan.

WIBAUT, JOHAN PIETER, Org. Chem. Laboratorium of the University, N. Prinsengracht 126, Amsterdam. Dutch. Professor of Organic Chemistry at the University of Amsterdam. Several papers in *Recueil des Travaux Chimiques des Pays Bas* and in *Proceedings* of the Royal Akademie of Sciences, Amsterdam. (*Signed by*) J. Kalff.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. I. Chemische Methoden, Teil 1, Heft iv. Berlin 1925. pp. 543 to 926 + xxiv. ill. *M.* 16.20. (*Recd.* 31/12/25.)

From the Publishers: Herren Urban & Schwarzenberg.

DAVIDSON, ALFRED. Intermediates for dyestuffs. London 1926. pp. xiv + 256. 36*s.* net. (*Recd.* 16/12/25.)

From the Publishers: Messrs. Ernest Benn.

PUBLIC LIBRARY

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, February 4th, 1926, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., Vice-President, in the Chair.

The following were formally admitted Fellows of the Chemical Society: W. V. Thorpe, L. F. Hewitt, M. S. Dixon, R. J. Bromfield, and E. S. Hiscocks.

Certificates were read for the first time in favour of:

Basil William Anderson, B.Sc., Moorlands, Woldingham.
Edward Sidney Armstrong, B.Sc., 69, Breakspears Road, Brockley, S.E. 4.
Arnold Belchetz, M.Sc., Emmanuel College, Cambridge.
Einar Christian Saxtorph Biilmann, D.Ph., Østervoldgade 5, Copenhagen.
Robert Sidney Cahn, M.A., D.Ph., 25, Ashwood Avenue, West Didsbury, Manchester.
William Denis Coales, B.Sc., Melrose, Chiltern Road, Dunstable.
Nicholas Michael Cullinane, M.Sc., Ph.D., F.I.C., 27, Michael Street, Waterford.
James Dundee, 95, University Road, Belfast.
John Garwood Everett, A.I.C., 39, Montserrat Road, Putney, S.W. 15.
Harvey Satchell Garlick, 15, Duke's Avenue, Chiswick, W. 4.
Charles Roy Greenwood, 21, Stanstead Road, Forest Hill, S.E. 23.
Sidney John Gregg, B.Sc., A.R.C.S., 20, Acfold Road, Fulham, S.W. 6.
Arthur William Jarman, B.Sc., 9, Crouch Hill, N. 4.
William Johnston, 16, Warburton Road, Seaforth, Liverpool.
Hilda Mabel Enid Jones, B.Sc., 3, Holly Lodge Gardens, Highgate, N. 6.
Francis Charles Kelly, B.Sc., c/o Medical Department, Nairobi.
John McDonald, M.A., B.Sc., Ph.D., 19, White Street, Lochgelly.
Gordon Nonhebel, B.A., The University, Leeds.
Leonard James Spencer, M.A., Sc.D., F.R.S., Mineral Department, British Museum, S. Kensington, S.W. 7.
Walter Arthur Steed, 72, St. John's Road, Isleworth.
Ralph Charles Storey, M.Sc., A.I.C., 119, Moorside, Armley, Leeds.
Christine Elizabeth Webb, B.Sc., A.I.C., 12, Clenheim Road, St. Albans.
Vera Katherine Wilson, B.Sc., Willow House, Penistone, Sheffield.

The following papers were read:

"The complex salts of $\beta\beta'\beta''$-triaminotriethylamine with nickel and palladium." By F. G. MANN and W. J. POPE.

"$\gamma\gamma'\gamma''$-Triaminotripropylamine and its complex compounds with nickel." By F. G. MANN and W. J. POPE.

"A comparison of the atomic weight of silicon from different sources." By P. L. ROBINSON and H. C. SMITH.

"Trypanocidal action and chemical constitution. Part IV. Arylamines of aminohydroxyphenylarsinic acids." By L. F. HEWITT and H. KING.

Special Lecture held in the Chemistry Theatre of the University College, Gower Street, W.C. 2, on Thursday, February 11th, 1926, at 8 p.m., Professor H. E. ARMSTRONG, LL.D., F.R.S., Vice-President, in the Chair.

Professor J. Barcroft, F.R.S., delivered his Lecture entitled "Hæmoglobin." A vote of thanks to the Lecturer, proposed by Dr. H. H. Dale, Sec.R.S., and seconded by Professor J. C. Drummond, was carried with acclamation, Professor Barcroft making acknowledgment.

After the Lecture the following demonstrations were given:

(1) Dr. Hartridge and Dr. Roughton: Method of measurement of rapid velocity constants.
(2) Dr. Keilin: Cytochrome in animal and vegetable tissues.
(3) Professor Barcroft and Dr. Hecht: Method of measurement of equilibrium constants.
(4) Mrs. Kerridge: Glass electrode.
(5) Mr. R. Hill: Porphyrins of the heavy metals.
(6) Mr. G. S. Adair: Measurements of osmotic pressure of hæmoglobin.

Ordinary Scientific Meeting, Thursday, February 18th, 1926, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., Vice-President, in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death, of the following Fellows:—

	Elected.	Died.
Lewis Smith Cocking	Feb. 16th, 1888.	Nov. 15th, 1925.
Sir John Burchmore Harrison	May 17th, 1888.	Feb. 8th, 1926.

It was announced that:

1. The Harrison Memorial Prize Selection Committee, consisting of the Presidents of The Chemical Society, The Institute of Chemistry, The Society of Chemical Industry, and The Pharmaceutical Society, had unanimously resolved that no award of the Harrison Memorial Prize be made for 1925.

2. The Second National Congress of Pure and Applied Chemistry and the Celebrations of the Centenary of the birth of Stanislao Cannizzaro will be held under the auspices of the Associazione Italiana di Chimica in Palermo from May 23rd to June 2nd, 1926.'

The following were formally admitted Fellows of the Chemical Society: F. K. V. Koch, Fred. H. Webb, John Carlile, and B. D. Laroia.

Certificates were read for the first time in favour of:

James Allan, M.A., B.Sc., 36, High Street, Chorlton-on-Medlock.
Reginald Percy Ayres, B.Sc., 140, Hanley Road, N. 4.
Robert Jones Evans, B.Sc., Waenllan, Penmachno, Bettws-y-Coed.

William Gerrard, B.Sc., 31, South Side, S.W. 4.
Richard Isaac Edward Hall, B.A., 289, Iffley Road, Oxford.
John Valon Head, B.A., St. George's Lodge, Winchester.
Edmund B. Middleton, B.A., M.Sc., Ph.D., Parlin, N.J., U.S.A.
Claudius Philip Proctor, The University, Edgbaston, Birmingham.
Charles Norman Ridley, B.Sc., 36, Percy Terrace, Sunderland.
James William Allan Woodley, B.Sc., A.I.C., 22, Taunton Road, Lee, S.E. 12.

Miss E. Lakeman and Mr. P. Appleyard were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :

Edwin Melhuish Bailey.
Thomas Harvey Bailey.
Dattatraya Vishwanath Bal.
Janardhana Ram Bhatt, B.Sc.
William Blakey, B.A.
James Miller Breckenridge, M.S., Ph.D.
Bernard Meredith Brown, B.Sc., F.I.C.
George Henry Carter.
Frederick Leslie Clark.
Sydney George Clarke, B.Sc., A.I.C.
Herbert Clayton, M.A., B.Sc.
Carl Howard Collie, B.A.
William Eric Downey, Ph.D., D.I.C.
William Joseph Elford, B.Sc., Ph.D., A.I.C.
Frederick Raine Ennos, B.A., B.Sc., A.I.C.
Reginald Clifford Fawcett, B.Sc.
Andor Fodor, Ph.D.
John Charles Forsyth.
Graham Charles Gibson, B.Sc., A.I.C.
Antonius de Graaff.
Ko Ko Gyi.
Richard Walter Hardacre, M.Sc.
Arthur Jacob Immins Harding, M.Sc.
Herbert Harris, B.Sc., Ph.D., A.R.C.S., D.I.C.
John Haslam, M.Sc.
Tom Heap, B.Sc.
Joseph Frederick Hirst, B.Sc., A.I.C.
Thomas Hodgkinson, B.Sc.Tech.
Stanley Barker Johnson.
Leonard George Jupp, B.Sc., A.R.C.S.
Charles Ambrose Kelly.
Ralph Harry Klein, A.I.C.
James Wallace Laing.
Hugh Martin Leake, Sc.D., M.A.
Percy Joshua Leaper, B.Sc., A.I.C.
Philip Guy Marshall.
Horace Alfred Mayes, B.Sc.
L. S. Narayanaswamy, B.A., M.B., B.S.
Ankarath Sankunni Mannadi Nayar, M.B., B.S., Ph.D.
Leonard William Needham, M.Sc.
Millicent Emma Nottage, B.Sc.
Henry Geoffrey Ordish, B.A.
John Packer, M.Sc.
Jogesh Chandra Paul, B.Sc.
Montague Alexandra Phillips, A.I.C.
Devasikhamani Sunderavelu Pillai.
Arnold Pinkus.
William Bennett Price, B.Sc.
Henry Grattan Pring.
Clifford Burrough Purves, B.Sc.
George Henry Purvis.
Charles Aylmore Ray, B.A.
Ivy Winifred Elizabeth Rogers.
Ronald Stanley Russell, B.A.
Robert John Schaffer, B.A., B.Sc.
Madhavlal Sukhlal Shah, M.Sc.
Edna Clark Smith, B.Sc.
Henry Mills Spittle.
Charles Richard Noel Strouts, B.A., B.Sc., A.I.C.
Sidney David Sutton.
Cyril James Allan Taylor, M.Sc., A.I.C.
Frank Sherwood Taylor, M.A., B.Sc.
Raymond Taylor, M.A., B.Sc.
Richard Victor Thomas, B.A.
George Ernest Thompson.
Bernard William Town, B.Sc., A.R.C.S.
Victor Martin Trikojus, B.Sc.
James Walkden.
Claude Stanley Watson-Will.
Kenneth Norman Welch, B.Sc.
Johan Pieter Wibaut.
Henry Wilkins, B.Sc.
Idris Williams, B.A.
George Ogilvie Wills, B.Sc., Ph.D.
William John Wilson, F.I.C., A.C.G.I.
Henry Woolf.
Reginald Frank Wright, A.R.C.S.
William Ewart Wright, M.Sc., A.I.C.

The following papers were read :—

"The ultra-violet spectrum of the rare earths, neodymium, praseodymium, samarium, europium, erbium, and some others." By J. H. GARDINER.

"The application of graphic formulæ to molecular compounds hydration and variations of valency." By H. D. CAREY.

"The inhibition of the glow of phosphorus." By H. J. EMELÉUS.

"Properties of conjugated compounds. Part I. Conjugative associations in extended 'conjugated' systems." By E. H. FARMER and J. ROSS.

ANNUAL GENERAL MEETING AND DINNER.

The Annual General Meeting will take place in the University of Manchester on Thursday, March 25th, 1926, at 4 p.m., tea being served at 3.30; the Dinner will be held the same evening at the Midland Hotel, Manchester, at 6.30 for 7 o'clock. The price of tickets for the Dinner is 10*s.* 6*d.* each, including gratuities to waiters, but not including wine, and application for tickets should be made as soon as possible to Mr. L. B. Tansley, The Shirley Institute, Didsbury, Manchester.

The ordinary fares from London to Manchester are £3 17*s.* 2*d.* first class return, and £2 6*s.* 4*d.* third class return. For a party of *not less than twelve travelling together from the same place and returning the same day,* the Railway Company is prepared to issue cheap tickets at the single fare for the double journey. This concession applies to Fellows travelling to Manchester from London or any provincial town. Those travelling from London should send in their names to the Assistant Secretary, The Chemical Society, Burlington House, W. 1, by Thursday, March 18th, stating whether it is their intention to return the same day. Those residing in the provinces desiring cheap tickets should make arrangements with the local Stationmaster.

A train leaves London (St. Pancras) at 10.25 a.m., arriving at Manchester (Central Station) at 2.25 p.m. The return journey can be made by the train leaving Central Station at 12 midnight, reaching St. Pancras at 6 a.m.

List of Papers, or Abstracts thereof, received between January 22nd, 1926, and February 18th, 1926. (This list does not include the titles of papers, or abstracts thereof, which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"The isomeric fluorobenzaldehydes and derivatives." By J. B. SHOESMITH, C. E. SOSSON and R. H. SLATER.

"The oximes of 2 : 4-dinitrobenzil and the Beckmann change." By G. Bishop and O. L. Brady.

"The constitution of magnesium acetate solutions." By A. C. D. Rivett.

"The relative concentrations of various electrolytes required to salt out soap solutions." By J. W. McBain and A. V. Pitter.

"Aminobenzthiazoles. Part III. The tautomerism and unsaturation of the aminothiazole system." By R. F. Hunter.

"The reactions of thiocarbonyl chloride. Part II. Reaction with alkylamines, and synthesis of *s*-alkyl-α-naphthylthiocarbamides." By G. M. Dyson and R. F. Hunter.

"*s*-Arylallylthiocarbamides and their bromination." By R. F. Hunter.

"Termolecular reactions. Reduction of silver acetate by sodium formate." By A. Coutie.

"Derivatives of 2-thiobenzimide." By E. W. McClelland and A. J. Gait.

"The reaction between formic acid and iodine in aqueous solution." By D. L. Hammick and M. Zvegintzov.

"The oxidation potential of the system: selenium dioxide–selenium." By S. R. Carter, J. A. V. Butler and F. James.

"The boiling points of some higher aliphatic *n*-hydrocarbons." By F. E. Francis and N. E. Wood.

"On the deposition of metallic zinc on the positive pole of a simple voltaic cell." By S. R. Humby and M. W. Perrin.

"Synthesis of derivatives of γ-xylose." By W. N. Haworth and G. C. Westgarth.

"Preparation of nickel membranes for ultrafiltration." By J. Manning.

"Some organo-silicon compounds." By R. R. Widdowson.

"Conditions of formation of rings attached to the *o*-, *m*-, and *p*-positions of the benzene nucleus. Part II. The reduction of *m*- and *p*-phenylenediacetonitrile." By A. F. Titley.

"Some substituted cinnamic amides and acids." By H. A. Harrison and H. Wood.

"The nitration of benzil." By F. D. Chattaway and E. A. Coulson.

"The binary system barium iodide–water." By J. Packer and A. C. D. Rivett.

"The hydrolysis of potassium cuprocyanide by sulphuric acid." By A. S. Corbet and R. M. Woodman.

"A note on the synthesis of naphthathioxins." By R. Child and S. Smiles.

"The vapour pressures of chlorine dioxide." By F. E. KING and J. R. PARTINGTON.

"The morphine group. Part III. The constitution of neopine." By C. F. VAN DUIN, R. ROBINSON and J. C. SMITH.

"The action of thionyl chloride on hydroxyanthraquinones. Part II. Quinizarin." By A. GREEN.

"Diacetyl quinizarin." By A. GREEN.

"Note on the critical temperature of mercury." By L. A. SAYCE and H. V. A. BRISCOE.

"The hydrolytic action of low pressure superheated steam on salts of the alkaline earth metals." By P. L. ROBINSON, H. C. SMITH, and H. V. A. BRISCOE.

"The monochloro-derivatives of *m*-cresol." By G. P. GIBSON.

"The chemistry of the glutaconic acids. Part XIX. A consequence of mobility." By J. PACKER and J. F. THORPE.

"Some observations on liquid boundaries and diffusion potentials." By S. R. CARTER and F. M. LEA.

"The molecular configuration of polynuclear aromatic compounds. Part VII. The molecular asymmetry of 6-nitrodiphenic acid." By G. H. CHRISTIE, J. KENNER, and V. M. TRIKOJUS.

"The system ammonium acetate–acetic acid–water." By R. SUGDEN.

"Aminobenzthiazoles. Part IV. The stability of the bromides of the 1-xylidinodimethylbenzthiazoles." By R. F. HUNTER.

"Liquid-line corrosion." By E. S. HEDGES.

"The ternary system sodium thiosulphate–sodium sulphate–water." By R. R. GARRAN.

"The additive formation of four-membered rings. Part VIII. Some additive reactions of nitroso-compounds." By M. D. FARROW and C. K. INGOLD.

"The nature of the alternating effect in carbon chains. Part IV. Some abnormal reactions as evidence of the incipient ionisation of certain hydrogen atoms in hydrocarbon radicals." By E. L. HOLMES and C. K. INGOLD.

"The nature of the alternating effect in carbon chains. Part V. A discussion of aromatic substitution with special reference to the respective rôles of polar and non-polar dissociation; and a further study of the relative directive efficiencies of oxygen and nitrogen." By C. K. INGOLD and E. H. INGOLD.

"The nature of the alternating effect in carbon chains. Part VI. A study of the relative directive efficiencies of oxygen and fluorine in aromatic substitution." E. L. HOLMES and C. K. INGOLD.

"Studies with the microbalance. Part III. The filtration and

estimation of very small amounts of material." By E. J. HARTUNG.

"An experimental study of protective colloids. Part I. The influence of concentration." By S. SUGDEN and M. WILLIAMS.

"A method for determining the solubility of sparingly soluble substances." By S. MITCHELL.

"An adjustable low-temperature bath." By W. H. PATTERSON.

"The hydrolysis of guanidine." By J. BELL.

"Some reactions of 1-*p*-toluidino*cyclo*pentane-1-carboxylic acid. A new carbazole synthesis." By S. H. OAKESHOTT and S. G. P. PLANT.

"The conditions underlying the formation of unsaturated and cyclic compounds from halogenated open-chain derivatives. Part VIII. Products derived from pimelic acid. An application of Bischoff's dynamic hypothesis." By A. HASSELL and C. K. INGOLD.

"The conditions underlying the formation of unsaturated and cyclic compounds from halogenated open-chain derivatives. Part IX. Products derived from suberic acid." By C. K. INGOLD.

"The conditions underlying the formation of unsaturated and cyclic compounds from halogenated open-chain derivatives. Part X. Products derived from azelaic acid." By F. R. Goss and C. K. INGOLD.

"5-Chlorophenthiarsine and its rate of formation from *o*-thiophenoxyphenyldichloroarsine." By E. ROBERTS and E. E. TURNER.

"Further contributions to the organic chemistry of arsenic." By E. ROBERTS, E. E. TURNER, and (in part) F. W. BURY.

"The constitution of polysaccharides. Part IX. The degradation of cellulose to an anhydro-trisaccharide." By J. C. IRVINE and G. J. ROBERTSON.

"The hydrates of chromic nitrate." By J. R. PARTINGTON and S. K. TWEEDY.

"Interactions of tellurium tetrachloride and aryl alkyl ethers. Part II." By G. T. MORGAN and R. E. KELLETT.

"Carboxylated β-diketones." By G. T. MORGAN and C. R. PORTER.

"Researches on residual affinity and co-ordination. Part XXVI. A quadridentate group in combination with bivalent metals." By G. T. MORGAN and J. D. M. SMITH.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

BATE, STANLEY CHARLES. The synthesis of benzene derivatives. London 1926. pp. 230. 21*s.* net. (*Recd.* 4/2/26.)
From the Publishers: Messrs. Ernest Benn.

BRAUN, JULIUS v. Lehrbuch der organischen Chemie. Leipzig 1925. pp. xii + 508. (*Recd.* 9/2/26.) From the Author.

CLARK, CECIL HENRY DOUGLAS. The basis of modern atomic theory. London 1926. pp. xx + 292. ill. 8*s.* 6*d.* net. (*Recd.* 20/1/26.) From the Publishers: Messrs. Methuen & Co.

EVERS, NORMAN. The chemistry of drugs. London 1926. pp. 247. 32*s.* 6*d.* net. (*Recd.* 16/12/25.)
From the Publishers: Messrs. Ernest Benn.

GAS JOURNAL. Winning papers in the coke competition. London 1925. pp. 86. ill. (*Recd.* 31/12/25.)
From Mr. H. M. Spiers.

MACARDLE, DONALD W. The use of solvents in synthetic organic chemistry. London 1926. pp. viii + 218. 15*s.* net. (*Recd.* 25/1/26.) From the Publishers: Messrs Chapman & Hall.

ORGANIC SYNTHESES: an annual publication of satisfactory methods for the preparation of organic chemicals. Vol. V. Edited by CARL SHIPP MARVEL [and others]. New York 1925. pp. viii + 110. ill. 7*s.* 6*d.* net. (*Recd.* 20/1/26.)
From the London Publishers: Messrs Chapman & Hall.

POZZI-ESCOT, MARIUS EMMANUEL. Les diastases et leurs applications. Paris [1900]. pp. 218.

—— État actuel de nos connaissances sur les oxydases et les réductases: établissement du groupe nouveau des réductases. Paris 1902. pp. 240. From Dr. R. H. A. Plimmer.

RESEARCH ASSOCIATION OF BRITISH RUBBER AND TYRE MANUFACTURERS. *Information Bureau.* Summary of current literature. Vol. II, etc. Croydon 1924 +. (*Reference.*) From the Association.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. IV, Part iii. Berlin 1925. pp. 545 to 816. ill. *M.* 10. (*Recd.* 31/12/25.)
From the Publishers: Herren Urban & Schwarzenberg.

II. *By Purchase.*

BABLIK, HEINZ. Galvanizing: a theoretical and practical treatise. Translated by CHARLES T. C. SALTER. London 1926. pp. viii + 168. ill. 12*s.* 6*d.* net. (*Recd.* 15/1/26.)

BAILEY, CLYDE H. The chemistry of wheat flour. New York 1925. pp. 324. ill. 20*s.* net. (*Recd.* 5/1/26.)

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, March 4th, 1926, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., Vice-President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death on February 21st, of its distinguished Honorary Fellow, Professor Dr. Heike Kamerlingh Onnes (elected 18th March, 1920), and stated that the following telegram had been sent to Madame Kamerlingh Onnes: "President and Council of Chemical Society deeply mourn the loss of their distinguished Honorary Fellow, Kamerlingh Onnes.—Donnan, Foreign Secretary."

The following List of Nominations for vacant places on the Council was read from the Chair:

President:

H. Brereton Baker.

Vice-Presidents who have filled the office of President (two vacancies):

Arthur W. Crossley and Percy F. Frankland.

Vice-Presidents who have not filled the office of President (two vacancies):

Sir Robert Robertson and Robert Robinson.

Ordinary Members of Council:

(*a*) Town Members, *i.e.*, those resident within 50 miles of Charing Cross (one vacancy):

R. H. Pickard.

(*b*) Country Members, *i.e.*, those resident beyond 50 miles from Charing Cross (four vacancies):

H. V. A. Briscoe, R. Whytlaw Gray, T. J. Nolan, and K. J. P. Orton.

The following were formally admitted Fellows of the Chemical Society: Bawa Kartar Singh, H. W. Keenan, S. D. Sutton, Henry Wilkins, Edna C. Smith, Ivy W. E. Rogers, J. Packer, J. Haslam,

R. F. Wright, M. A. Phillips, L. G. Jupp, P. G. Marshall, W. A. N. Markwell, H. K. Southern, Niels Bjerrum, Sir Robert Robertson, A. Chaston Chapman.'

Certificates were read for the first time in favour of :

William John Dann, B.Sc., Biochemical Laboratory, The University, Cambridge.
George Henry Davis, 34, Bouverie Road, N. 16.
Samuel Hill, 53, Lodge Road, Orrell, Wigan.
Clifford Walter Howell, M.Sc., St. Mary's Hall, Stonyhurst, Blackburn.
Andrew McKeown, Muspratt Laboratory, The University, Liverpool.
Gobindram Tarachand Mansharamani, 13, Inglis Street, Stoke-on-Trent.
Navin Chandra Mittal, B.Sc., The Prince of Wales College, Jammu, India.
David Muir, Gwernygerwn House, Treforest, Pontypridd.
John Trevor Nicholl, Denehurst, Adelaide Park, Belfast.
Muhammad Qudrat-i-Khuda, M.Sc., 6/39, Linden Gardens, Notting Hill Gate, W. 2.
Arthur Howard Roberts, A.R.C.S., A.I.C., Gammons Farm, Gammons Lane, Watford.
Kunwar Bisheshwar Dayal Seth, Kotra Biswan, District Sitapore, India.
Charles Soyka, A.R.C.S., 65, Castletown Road, W. 14.

The following papers were read :

" An experimental study of protective colloids. Part I. The influence of concentration." By S. SUGDEN and M. WILLIAMS.

" The constitution of the condensation product of β-phenylhydroxylamine and acetone." By F. H. BANFIELD and J. KENYON.

" The unsaponifiable matter from oils of elasmobranch fish. Part I. A contribution to the constitution of squalene (spinacene)." By I. M. HEILBRON and E. D. KAMM.

" The unsaponifiable matter from oils of elasmobranch fish. Part II. The hexahydrochlorides of squalene." By I. M. HEILBRON and W. M. OWENS.

Ordinary Scientific Meeting, Thursday, March 18th, 1926, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., Vice-President, in the Chair.

The Chairman referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
Martin Fenn Roberts	Jan. 20th, 1876.	Feb. 22nd, 1926.
Shigetake Suguira	Dec. 5th, 1878.	Feb. 13th, 1924.

The Chairman announced that

1. The next Ordinary Scientific Meeting arranged for April 15th, had been postponed to April 22nd, 1926, at 8 p.m.

2. The second of the two Informal Lectures arranged by the

Council will be delivered on Thursday, April 29th, 1926, at 6 p.m., by Professor W. E. S. Turner, O.B.E., D.Sc., who has chosen as his subject "Additive Relationships in the Properties of Glasses."

3. The Council, at its meeting this afternoon, had appointed Dr. A. D. Mitchell as Assistant Editor.

4. The List of Fellows for 1926 will not be published.

The following were formally admitted Fellows of the Chemical Society: W. J. Elford and S. G. Clarke.

Certificates were read for the first time in favour of:

Arthur Percival Anderson, B.Sc., The High School, South Shore, Blackpool.
Francis George Barker, 61, Crimicar Lane, Fulwood, Sheffield.
Joseph Blake Koepfli, M.A., Dyson Perrins Laboratory, Oxford.
Robert Osborne Orr McCrone, B.Sc., 15, Montgomerie Quadrant, Kelvinside, Glasgow.
John McLintock, B.Sc., 8, Sardinia Terrace, Glasgow.
Peter Maitland, B.Sc., 10, Dryburgh Gardens, Glasgow.
William Leopold Peard, B.Sc., 42, Dingwall Road, Croydon.

The following certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

Giuseppe Grassi Cristaldi, Via Androne 35, Catania, Italy.
Robert Henry King Foster, Charleston, West Virginia, U.S.A.
Nicolas de Kolossowsky, Prospekt Maklina 20, Leningrad.
Hershel Gaston Smith, Gulf Refining Co., Port Texas, U.S.A.

The following papers were read:

"Orientation effects in the diphenyl series. Part II. The constitution of Bandrowski's dinitrobenzidine." By R. J. W. Le Fèvre and E. E. Turner.

"The orientating influence of free and bound ionic charges on attached simple or conjugated unsaturated systems. Part I. The nitration of some derivatives of benzylamine." By H. R. Ing and R. Robinson.

"The morphine group. Part IV. A new oxidation product of codeine." By R. S. Cahn and R. Robinson.

"The laws of aromatic substitution. Part V. The directing effect of electrolytically dissociated groups." By B. Flürscheim and E. L. Holmes.

"The velocity of decomposition of heterocyclic diazonium salts. Part II. The aminopropyltriazoles." By J. Reilly and P. J. Drumm.

List of Papers, or Abstracts thereof, received between February 18th and March 18th, 1926. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Studies in the diphenyl series. Part I. The isomeric 4 : 4′-dichloro-3 : 3′- and -3 : 5′-dinitrodiphenyls and 4″ : 4‴-dichloro-3″ : 6 : 3‴ : 6′- and -3″ : 6 : 2′ : 5‴-tetranitrobenzerythrenes." By H. H. HODGSON and (in part) F. C. GOROWARA.

"The isomerism of the styryl alkyl ketones. Part III. Methoxy-2-hydroxy and 4-hydroxystyryl alkyl ketones." By A. MCGOOKIN and D. J. SINCLAIR.

"A study of the basic copper sulphates." By G. FOWLES.

"The constitution of maltose." By J. C. IRVINE and I. M. A. BLACK.

"The dehydration of glycols derived from α-naphthylglycollic acid. By A. MCKENZIE and W. S. DENNLER.

"The preparation and resolution of *dl-cis*-2 : 5-dimethylpiperazine." By F. B. KIPPING and W. J. POPE.

"The ternary system sodium sulphide–sodium sulphate–water." By A. R. HOGG.

"The resin of Hevea rubber." By G. S. WHITBY, J. DOLID, and F. H. YORSTON.

"Some fatty acid derivatives." By G. S. WHITBY.

"The hydrolysis of acetyl-*o*-benzylideneaminophenol." By F. BELL and J. KENYON.

"1-Amino-2-acetylaminobenzene and acetyl-1 : 2 : 3-benztriazole." By F. BELL and J. KENYON.

"Some reactions of benzoylmandelonitrile." By B. H. INGHAM.

"Trypanocidal action and chemical constitution. Part V. Arylsulphonamides of some phenylarsinic acids." By L. F. HEWITT, H. KING, and W. O. MURCH.

"Applications of thallium compounds in organic chemistry. Part III. Alkylations." By C. M. FEAR and R. C. MENZIES.

"The labile nature of the halogen atom in organic compounds. Part XII. Halogen compounds of barbituric acids." By A. K. MACBETH, T. H. NUNAN, and D. TRAILL.

"The halogenation of phenols." By F. G. SOPER and G. F. SMITH.

"The structure of racemic substances." By W. J. HICKINBOTTOM.

"Studies of equilibrium in systems of the type: lead halide–potassium halide–water. Part I. Lead chloride–potassium chloride–water at 25°." By L. J. BURRAGE.

"Studies of equilibrium in systems of the type: lead halide–potassium halide–water. Part II. Lead bromide–potassium bromide–water and lead iodide–potassium iodide–water at 25°." By L. J. BURRAGE.

"An analysis of the ether. Part I." By W. C. REYNOLDS.

"The determination of the rate of hydrolysis of sparingly soluble esters." By R. C. SMITH and H. A. PATERSON.

"The heat of combustion of salicylic acid. A reply to E. Berner." By P. E. Verkade and J. Coops.

"The introduction of the selenocyano-group into aromatic compounds." By F. Challenger, A. T. Peters, and J. Halévy.

"Porphyroxine. Part II." By J. N. Rakshit.

"The behaviour of mannose diacetone on methylation." By J. C. Irvine and A. F. Skinner.

"The chemistry of the three-carbon system. Part V. The mechanism of tautomeric interchange and the effect of structure on mobility and equilibrium." By C. K. Ingold, C. W. Shoppee, and J. F. Thorpe.

"The relationship between the optical rotatory powers and the relative configurations of optically active compounds. Part III. Optical rotatory dispersive power." By G. W. Clough.

"The reactivity of meso-substituted anthracenes. Part II." By J. W. Cook.

"The constitution of the disaccharides. Part X. Maltose." By C. J. A. Cooper, W. N. Haworth, and S. Peat.

"The complexity of the solid state. Part IV. The behaviour of pure sulphur trioxide. Part III." By A. Smits and P. Schoenmaker.

"A synthesis of 1 : 2-dihydroquinaldine. A correction." By F. A. Mason.

"The isomerism of the dihydroxystearic acids produced by oxidation of acids of the oleic and elaidic series." By T. P. Hilditch.

"The action of phosphorus on salts of silver and other metals. By O. J. Walker.

"The nature of the alternating effect in carbon chains. Part VII. A study of the relative directive efficiencies of oxygen and sulphur in aromatic substitution." By E. L. Holmes, C. K. Ingold, and E. H. Ingold.

"*o*-Phenylene dithiol." By W. R. H. Hurtley and S. Smiles.

"Note on the density of boric oxide from a fractional crystallisation of boric acid." By H. V. A. Briscoe and P. L. Robinson.

"Quaternary ammonium perhalides." By T. H. Reade.

"Selective solvent action. Part V. Salting in." By R. Wright.

"The correlation of additive reactions with tautomeric change. Part V. The structural conditions affecting mobility and equilibrium." By K. E. Cooper, C. K. Ingold, and E. H. Ingold.

"Experiments on the formation of mother-of-pearl." By P. B. Ganguly.

"An analysis of the ether. Part II. The magnetic fields in atoms." By W. C. REYNOLDS.

"On the existence of the suboxides of lead and thallium." By F. AUFENAST and H. TERREY.

"On active nitrogen. Part I. The heat of formation and nature of active nitrogen." By E. J. B. WILLEY and E. K. RIDEAL.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. XI. Methoden zur Erforschung der Leistungen des Pflanzenorganismus, Teil 3, Heft iv. Berlin 1926. pp. 613 to 714. ill. *M.* 4.80 net. (*Recd.* 22/2/26.)

From the Publishers: Herren Urban & Schwarzenberg.

BRITISH DRUG HOUSES. The B.D.H. book of A.R. standards. London 1926. pp. xiv + 112. (*Reference.*) 2*s.* 6*d.* net.

From the Publishers: The British Drug Houses, Ltd.

DALE, HENRY HALLETT [and others]. Lectures on certain aspects of biochemistry. London 1926. pp. viii + 314. ill. 12*s.* 6*d.* net. (*Recd.* 2/3/26.) From Professor J. C. Drummond.

LEVY, STANLEY ISAAC. An introduction to industrial chemistry. London 1926. pp. xiv + 288. ill. 15*s.* net. (*Recd.* 17/2/26.)

From the Publishers: Messrs. G. Bell & Sons.

SNELLGROVE, DOUGLAS ROSEBERY, and WHITE, JOHN LEDGER. Qualitative inorganic analysis. London 1926. pp. xii + 282. ill. 7*s.* 6*d.* net. (*Recd.* 18/2/26.)

From the Publishers: Messrs. Methuen & Co.

SYKES, SIR ALAN JOHN. [Compiler.] Concerning the bleaching industry. Manchester [1926]. pp. x + 120. ill. (*Recd.* 24/2/26.)

From the Compiler.

UNION INTERNATIONALE DE LA CHIMIE PURE ET APPLIQUÉE. Comptes rendus de la première, deuxième, cinquième Conferences Internationale de la Chimie; Rome 1920, Bruxelles 1921, Copenhage 1924. Paris [1921, 1922, 1925]. pp. 90, 124, 192. (*Reference.*)

—— Deuxième rapport de la Commission Internationale des Éléments Chimiques: table internationale des poids atomiques. Paris 1925. pp. 10. (*Reference.*)

—— Rapport du Comité de Travail de Réforme de la Nomenclature de Chimie Minérale. Paris 1926, pp. 20. (*Reference.*)

From the General Secretary.

II. *By Purchase.*

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PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

DINNER.

THE Dinner of the Society was held at the Midland Hotel, Manchester, on Thursday, March 25th, 1926, at 6.30 for 7 p.m., Prof. H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair. The following is a list of those present :—

Allan, J.
Allan, Mrs. J.
Armstrong, E. F., F.R.S.
Armstrong, Mrs. E. F.
Ashton, Miss M. M.
Associated Newspapers.
Baddiley, J.
Baddiley, Mrs. J.
Bain, D.
Baker, H. B., C.B.E., F.R.S.
Baker, Mrs. H. B.
Baly, E. C. C., C.B.E., F.R.S.
Baly, Mrs. E. C. C.
Bangham, D. H., M.C.
Barrowcliffe, M., M.B.E.
Barrowcliffe, Mrs. M.
Barwick, F. W.
Barwick, Mrs. F. W.
Bennett, Miss D. M.
Bennett, G. M.
Best, S. R.
Best, Mrs. S. R.
Briggs, S. H. C.
Brightman, R.
Brindley, W. H., M.C.
Brindley, Mrs. W. H.
Briscoe, H. V. A.
Brown, H. P.
Callan, T.
Campbell, A. F.
Cardwell, D.
Cardwell, Mrs. D.
Carr, S. E.
Chapman, A. W.
Chorley, P.
Christie, G. H.
Clayton, R. H.
Clemo, G. R.
Clibbens, D.
Clifford, F. W.
Coffey, S.
Coulthard, A.
Craven, Mrs. M. B.
Cronshaw, C.
Cronshaw, Mrs. C.
Cross, S. M.
Crossley, A. W., C.M.G., C.B.E., F.R.S.
Daily Dispatch.
Desch, C. H., F.R.S.
Dixon, H. B., C.B.E., F.R.S.
Dixon, Mrs. H. B.
Doran, W.
Drummond, J. C.
Dunn, F. P.
Dunningham, A. C.
Dunningham, Mrs. A. C.
Dutt, P. K.
Eldridge, A. A.
Ellison, R.
Emsley, J., J.P.
Evers, H.
Fairbrother, F.
Fargher, R. G.

Fargher, Mrs. R. G.
Freeth, F. A., O.B.E., F.R.S.
Fyfe, A. W.
Gaunt, R.
Gaunt, Mrs. R.
Gay, A. D.
Geake, A.
Gibson, C. S., O.B.E.
Green, A. G., F.R.S.
Green, Mrs. A. G.
Greenaway, A. J.
Hankey, J. L.
Hart, L. R.
Hart, Mrs. L. R.
Hatton, A. B.
Haworth, E.
Haworth, W. N.
Hayhurst, H.
Hayhurst, Mrs. H.
Henderson, J. A. R.
Henderson, Mrs. J. A. R.
Henstock, H.
Henstock, Mrs. H.
Hey, Mrs. Spurley
Hilditch, T. P.
Hinkel, L. E.
Holroyd, G. W. F.
Holt, F., O.B.E.
Hope, E.
Horner, T.
Horsfall, R. S.
Huebner, J.
Ingold, C. K., F.R.S.
Ingold, Mrs. C. K.
Jones, B. Mouat, D.S.O.
Kay, W. E.
Kay, W. W.
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Lees, Sir W. Clare, O.B.E., J.P.
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Mason, F. A.
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Menzies, Mrs. R. C.
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Owen, F.
Payman, J.
Pearson, Mrs. L.
Pennington, R. W.
Pennington, W. H.
Perkin, W. H., F.R.S.
Perkin, Mrs. W. H.
Philip, J. C., O.B.E., F.R.S.
Pickard, R. H., F.R.S.
Pickles, S. S.
Pope, Sir William J., K.B.E., F.R.S.
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Rodd, E. H.
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Rogers, W. D.
Rowe, F. M.
Rowe, Mrs. F. M.
Saunders, K. H.
Saunders, Mrs. K. H.

Sever, W.
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Silvester, W. A.
Smith, Clarence.
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Swann, H.
Tansley, L. B., M.C.
Thomas, G.
Thorpe, J. F., C.B.E., F.R.S.
Times, The.
Turner, Miss E. G.
Walker, T. K.
Walker, Mrs. T. K.
Walmsley, J. R.
Walmsley, Mrs. J. R.
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Weir, J. M.
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Wheaton, H. J.
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Whitham, H.
Wightman, W. A.
Wightman, Mrs. W. A.
Wilkinson, J. F.
Wilson, F. J.
Withers, J. C.
Withers, Mrs. J. C.
Wood, J. K.
Woodhouse, Sir Percy, J.P.
Wyatt, W. F.
Wyler, M.
Wynne, W. P., F.R.S.

The following is the Toast List and Programme :—

1. "His Most Gracious Majesty The King."

2. "Her Majesty the Queen, His Royal Highness the Prince of Wales, and the other Members of the Royal Family."

By Sir Percy Woodhouse, Kt., J.P. :—

3. "The Chemical Society," coupled with the name of the President.

By Professor E. C. C. Baly, C.B.E., F.R.S. :—

4. "The City of Manchester," coupled with the name of the Right Hon. The Lord Mayor.

By Professor J. F. Thorpe, C.B.E., F.R.S.

5. Professor H. B. Dixon, C.B.E., F.R.S., on the Fiftieth Anniversary of his election to the Chemical Society.

6. Song by Professor J. C. Philip, O.B.E., F.R.S. :—

By Professor Sir William Pope, K.B.E., F.R.S. :—

7. "Our Guests."

Reply by Sir W. Clare Lees, O.B.E., J.P.

8. Song by Professor J. C. Philip, O.B.E., F.R.S.

Sir Percy Woodhouse, in proposing the toast of "The Chemical Society," said :—

I have been called upon at very short notice to take the place of Sir Martin Conway to propose the toast of "The Chemical Society." I am sure that we all regret Sir Martin's absence. I do particularly, as he would have spoken to you with much more knowledge of the subject than I possess. I have utilised the very few hours since I knew I had this toast to propose in the endeavour to get some knowledge of your Society. I am told that the objects

of the Society are to further the pursuit of knowledge and research in Chemistry in all its branches. I am also told that your Society was founded in 1841, and received its charter in 1848, and that, though venerable in age, it is very virile in its activities.

This, I understand, is the first occasion that the Society has held its annual gathering in the provinces. Hitherto they have been held in London, and I assure you that Manchester appreciates the honour done to her by selecting this city for your first official visit to the provinces. On behalf of the Chamber of Commerce, of which I am President, I offer you a most hearty welcome, and assure you that all your activities are of intense importance to us commercial men who carry on business here.

You have, I think, made a particularly appropriate choice in selecting Manchester. It is the great industrial centre of the North, and is not only associated with the manufacture of cotton goods, with which many alone connect it, but it is also to a great extent very important in regard to the manufacture of chemicals, and more particularly in the application of the products of the chemical industry to textiles.

Manchester is also now particularly associated with the great organic chemical industry, and I am given to understand that researches connected with the latter fill the bulk of the pages of the well-known journal of your Society.

I gather, too, that before the war this organic chemical industry was almost entirely in foreign hands, and that the war has taught us the real necessity of encouraging the industry in this country. To create that industry, technical and scientific skill of the highest order is essential, and we are fortunate indeed that this country commands chemical brains capable of doing this and of doing it well.

It is not merely a question, however, of research and chemical knowledge, but a capacity to apply the results obtained in such research on a practical and industrial scale. This involves great organising ability, for there is no industry quite as complicated as the organic chemical industry. Those guiding that industry require an unusual breadth of outlook and a wide knowledge, a capacity for big business organisation and financial acumen, and the industry is fortunate indeed in having secured the services of eminent business men, who are willing to associate with the scientist in the development of this industry.

As far as dyes are concerned, I am told that of the 1,200 individual dyestuffs that are mentioned in the most recent book, not less than 600 are now being produced in this country, while before the

war the number did not exceed 100. The development of the dyestuffs industry has entailed a great amount of anxiety to those who have had to handle the situation, and I am told by my predecessor as President of the Manchester Chamber of Commerce, who has recently rejoined that industry, that he finds that what has so far been accomplished is most satisfactory, and that the industry is being managed on very sound lines.

It would, perhaps, not be out of place to mention that in 1913 the consumption of dyes in this country was forty-five million pounds, 11 per cent. of which were produced here. In 1924 the consumption of dyes was thirty-four million pounds, of which 87 per cent. were produced here. Further, the average price of dyes of British manufacture in 1921 was 3*s.* 11*d.* per lb., and in February 1926 1*s.* 9*d.* per lb., a reduction of 55 per cent.

I congratulate you gentlemen, Fellows of the Chemical Society, on this achievement, for to you, to a great extent, is due the remarkable improvement in the position of the dyeing industry to-day, a matter of the utmost importance, not only industrially, but nationally.

There is another reason why Manchester is the appropriate centre for your meeting. It has been the home of great chemists; the names of Dalton and Roscoe may well be recalled, and there have been many eminent successors. Then we have Professor Crossley, who, after the exceptionally valuable services rendered to the country during the war, when he held a most important and responsible post in the chemical war section, has done most admirable work at the Shirley Institute.

Then, at the University, special attention has always been paid to chemical research, and I am told that no other university has held so high a position as Manchester with regard to the training in chemistry. The distinction of the Professors who have held, and are now holding, the principal offices in the chemical department of the University accounts for this. The names of a few that occur to me are Perkin, Pope, Lapworth, Robinson, and Dixon, among others. It is impossible to overstate the importance of the chemist to textile and other trades, and I firmly believe that in the future chemistry will play a part of importance which few realise. There are still ever-fresh fields for the rising chemists of our generation to conquer. Despite the number of problems which still remain to be solved, I am quite certain that with the training they get, and with the recollection of what their predecessors have done, the students of to-day will not fail us in the future.

*

May I, in conclusion, tell you of a personal experience, and explain to you why I am not a chemist? I was at the Grammar School, as your President was some years after me. I was on the Classical side. One had to have some science subject. What that was depended on the form one was in. I had nearly twelve months under Dr. Watts, who was the first chemical master there, and it was a great relief from the classroom to go to the laboratory and, after being told certain details, be taken on to the benches to perform some experiment illustrating the lesson. I was so interested that I invested what pocket money I had in a Bunsen burner, retorts, and very limited apparatus, with which I sought to perform these experiments at home. My father was quite interested, and, having a number of sons to put out in the world, he actually thought of sending me to a chemical works. But, unfortunately, one night I started an experiment. I got on all right for a time, but it would not work before I had to go to bed. Still more unfortunately, it did work afterwards. My parents had some visitors who were playing whist in the room above. When I tell you that I was experimenting with sulphuretted hydrogen, and that it began to work, you will understand that there was trouble. It was so serious that I afterwards heard no more of going into the chemical industry. It was my misfortune, probably, but since then it has been my lot to be in the cotton trade.

I have the good fortune to propose the toast of "The Chemical Society" and its continued success and prosperity. I firmly believe it is the chemist who is going to save the trade of this country by his new discoveries and the new applications to industry which will result therefrom.

The toast, coupled with the name of the President, was honoured with enthusiasm.

Professor H. Brereton Baker replied:—

Before I begin the serious part of my speech I should like to dispel the illusion I find hinted at in certain quarters that the Chemical Society has come to Manchester in connection with the event which is going to happen in Liverpool to-morrow. I should like also to refer to a second hypothesis which has been promulgated. You know—though those who are not Fellows of the Chemical Society perhaps don't know—that there has been variation in the size of the "Abstracts" published by the Society, which has destroyed the symmetry of the book-shelves of all the Fellows of the Chemical Society. The second hypothesis advanced to explain the visit of the Chemical Society to Manchester was that the Council was supposed to be so afraid of meeting

their Fellows in London because they would have a struggle on the issue of the "Abstracts" question that they had to flee up North.

But those are not the reasons we have come to Manchester. We have come to Manchester because Manchester is the birthplace of modern chemistry, and also it may be said that it is the birthplace of modern physics.

I am not too young not to have met—as I did in my youth—the old gentleman, Lord Playfair, walking arm-in-arm with Dalton and Joule down Market-street in Manchester on what would be called a busy day. I tremble to think of those three old gentlemen walking arm-in-arm down the present Market-street; but there they were.

We have, as Sir Percy Woodhouse has suggested, reason to be proud of the profession of chemistry. Chemists have done good work in the world. I would like to call attention to one particular fact. That is, that all—or nearly all—Research Associations which were alluded to at the meeting this afternoon, whatever their object, are in the hands of chemists. I put it to you that this simply means that the chemist is recognised as a person who can be trusted, and usefully trusted, to do research work in any field.

What I have said may give point to the criticism that is often made of chemists, namely, that "they are self-sufficient"; and I am afraid that it is made more particularly of them if they come from Manchester. In the course of my rather varied career, I was head master of a large school in the south of London. I had on one occasion to admit a small boy. I had altogether somewhere about fifty or sixty small boys coming up. One boy told me he came from Rochdale. I said I was very glad to see a Lancashire boy there and I asked him what he thought of London. It turned out that he didn't think much of London. I said to him: "But think. It is much bigger and very much more important than Liverpool or Manchester." After thinking for a moment, he replied: "Well, it is only because we Lancashire boys"—notice the subtle compliment—"come up to London to keep it going."

A more personal experience, showing the self-sufficiency of chemists, especially when they are young, happened to me myself. I and others had been climbing in Lapland. We had chosen Lapland, by the way, because it was cheap and because there were no guides to bother us—nobody to say "This is the right way and that is the wrong way." We had accidents, it is true, but they were not painful. But, coming down the coast in a small steamer—we were all very disreputable-looking after six weeks in a savage

country: you can imagine we were not in a condition to walk down Piccadilly or across Albert Square—I noticed on board a man who was, on the balance, more disreputable than the rest of us. I got talking with him, and we got what Americans call swopping stories. He told me how on one occasion he jumped on a glacier across a crevasse and then found he could not jump back again. I said: "That was uncommonly foolish. The first lesson the Swiss guides gave us, because we learned in Switzerland, was never to go on a glacier alone and never to go without a rope." He was very humble about it. He said: "You are quite right; I ought not to have done it. In fact I was punished by having to stay the whole day till a search party came to look for me." We kept talking on and on in the desultory way one does on board a ship, and we got on the subject of public lecturing. I said: "It is such a pity that public lecturing has dropped out of English life." He said: "Well, I don't agree with you. Only a few months ago I was lecturing in the Free Trade Hall, Manchester, and there were some five thousand people there." I began to think I had made a mistake. I didn't know who he was. But a little later he told me he was going to give an account of his experiences in the far North to the Geographical Society. I said: "I wish you would tell me your name. I would like to come and hear you." He replied that his name was Conway. I said: "For goodness' sake don't tell me you are 'Himalaya Conway,' when I have been lecturing you on what you are to do when you get on a glacier!"

You may imagine that I feel very hurt that Sir Martin Conway should not have been present to-night to give point to my story.

That is the disease. I am going to try to give you the remedy. The disease is self-sufficiency. The remedy I have found best is to try to put myself in the position of a chemist of, say, 150 years ago and think what, with his knowledge, I should have done. I think probably in this assembly most of us, if we had been put in the position of Priestley, knowing what Priestley did himself, most of us might have discovered oxygen. A smaller number—and that because we have not the requisite qualities of perseverance in difficulties—might have made the discoveries that Scheele did. You remember how Scheele was an office boy in a chemist's shop. He used to go and beg candle ends round the village so as to light him in a disused cow-shed where, with broken bottles out of the pharmaceutical chemist's shop, he used to go and make experiments. I say a few of us, not many, might possibly have made Scheele's discoveries; but how many of us would have drawn the conclusion that Lavoisier did as to the part played by oxygen

in combustion? I venture to say that a good many of us would still remain believers in the theory of phlogiston.

Coming down later, when we come to Dalton's time, whatever view you may take as to the origin of the atomic theory, the amount of knowledge that Dalton had on which to base that theory was so small that I venture to say that not half a dozen of the members of this company here to-night would have devised the atomic theory, and I am quite certain I should not be one of the six.

We have heard this afternoon, to change the subject, of the financial difficulties of this Society. I have been President only about three hours, but I have got a plan. Sir Arthur Schuster, a Manchester man, has recently been investigating the expectation of life of the Fellows of the Royal Society. Now he has come to a very remarkable conclusion. That is, that if you belong to the Royal Society you have 10·7 additional years of life to live. In other words, your expectation of life is 10·7 years longer than that of an ordinary person. Well, if persons wish to live a long while they will join the Royal Society. But there are obstacles. What I should like to suggest is that some Fellow of our Society should deal with the Chemical Society in precisely the same way. He will no doubt prove that chemists live fifteen to twenty years longer than the ordinary person. If that is done, what a rush there will be to join the Chemical Society. We shall have all the old ladies in the country wanting to come in, and the increased revenue will, I am sure, rejoice the heart of our Treasurer. It will, of course, ruin all the insurance companies, but that is their business. I beg to thank you for the way in which you have received this toast.

The toast of "The City of Manchester," coupled with the name of the Right Honourable the Lord Mayor, was proposed by Professor E. C. C. Baly, who said:

It is with peculiar pleasure that I rise to propose the toast of "The City of Manchester," and it is with no uncertain voice that I assert this. My pleasure is based on two reasons—first my unbounded admiration for the City of Manchester and all that she stands for, and all that has been achieved by the labours of her citizens; and, secondly, because I have the pleasure to associate with this toast not the Lord Mayor—whose absence we regret so much—but my friend Dr. Levinstein, a member of the Corporation of this city, and a future Lord Mayor, who, at still shorter notice than I have had, has agreed to respond for the Lord Mayor.

In endeavouring to speak to the toast of the City of Manchester,

I find myself somewhat bewildered by the wealth of material that is at my command. There are so many facets to it that they embarrass me by their very number. Out of this multiplicity, if I may, I will select three, representing the life that is typical of Manchester. First, her culture; second, her civic government; and last, her University.

The culture of Manchester, I think, is best typified by her love of beauty in real music. Do we not envy her—all of us who are not Mancunians—her Hallé Orchestra, her splendid concerts, and those wonderful interpretations of the real gems of music? What, too, of the Free Trade Hall, where these concerts are given? Is not Manchester the envy of us who are unfortunate enough to live outside?

I do not say, of course, that we in Liverpool have no concerts. We have, and exceedingly proud we are of them, but I always note that our concerts must end quite early in order to enable the members of the orchestra to catch the last train back to their homes in Manchester.

In her civic government Manchester is an object lesson as to how that government should be achieved and how it should be maintained. One of the great difficulties of civic government is that of transport, and, as an adopted son of the sister city of Liverpool, I very much envy Manchester her tramways. Yet now, with the keen foresight she has always shown, her Corporation, I understand, are toying with the idea of subterranean tubes, that type of troglodytic transport that has so deeply embedded itself in the London clay. How shall I voice our full appreciation of Manchester's civic government? May I say that, with so notable a Corporation, small wonder it is that Manchester waxeth fat and ever progresseth with so dignified a gait.

Above all, Manchester is possessed of a University which has a fine and great reputation. I am only qualified to speak of two schools to which reference has already been made—the schools of Physics and of Chemistry. One has only to recount the names recorded on their rolls of fame to realise what is meant by that great and noble reputation. In the one school we find the names of Schuster, Rutherford, coupled with that remarkable man Bohr, and now Bragg, a member of that unique partnership, *père et fils*, who gained the Nobel Laureateship in 1915. In the sister school of Chemistry we find the names of Frankland, Roscoe, Schorlemmer, Dixon, and Perkin; and now the mantle has fallen on the shoulders of two men most worthy to uphold the great traditions of the past, Lapworth and Robinson.

There is one thing, however, in which Manchester is not so fortunate nor so blest. Those soft and balmy winds which blow from the West; well, we in Liverpool have the first taste of them. Deeply do we quaff those sea-borne draughts, and Manchester has to be content with what we leave—a sort of aerial heel-taps.

I think that Manchester is peculiarly fortunate in its Lord Mayor, and particularly for this reason, that his interests and ideals march so closely with our own. As you know, we men of chemistry are a very misunderstood race. But we are not, as popular fancy so often paints us, the devotees of 40,000 different smells and twice as many stinks. We are a group, or a series of groups, united by one common bond in a truly co-ordinated whole. May I instance what I mean? Our late President is interested in the outer clothing of man—the human engine; the dyeing chemist interests himself more particularly in the outer decoration and adornment of that engine. The soap chemist deals with the outer cleanliness of that engine—its external lubrication. The food chemist caters for the internal combustion machinery, and the brewing chemist concerns himself with its internal lubrication.

In all seriousness, the bond which unites us is the desire of every one of us to promote the health and benefit of the human race. That brings me to the two particular interests of the very versatile Lord Mayor of Manchester, which, I think, appeal to us as chemists more than most. As Chairman of the Housing and Sites Committee, he is attacking a key problem—a problem which I firmly believe to be the most important of all problems which confront the social reformer to-day. If his Lordship were here—and we regret that he is not: Dr. Levinstein will perhaps pass on my message to him—I would beseech him to remember the paramount importance of light in the lives of men, and, above all, in the life and growth of children. I would remind him of the work of those great chemists who have proved the cardinal importance of the vitamins, and who have proved that light, and light alone, produces those compounds from the normal products of the living organism. Then will the work of the Lord Mayor in providing the houses and open sites form the true complement of our own.

Secondly, as Vice-Chairman of the Agricultural Committee, his work again marches with ours. It is surely not necessary for me to point out the parallelism between him and us in this work. The great work of the Schools of Agriculture at Rothamsted and at Cambridge is too well known for me to mention, but one cannot but feel that the work of the Lord Mayor in providing allotments

and small holdings, to mention only one portion of his work, again forms the true complement of our own.

I sincerely regret the Lord Mayor's absence because I wanted to speak of his hobby. Like all wise men, he has a hobby, and his hobby is coal. This, of course, at once brings up in one's mind the Coal Commission Report, but you need not be afraid, for I am following Mr. Baldwin's advice: "Do not discuss the Coal Commission Report until you have read it," and this I have not had time to do. I am sure the Lord Mayor must be pleased and gratified by the recommendation in that report in favour of the municipal distribution of coal, seeing that he himself gave such yeoman service during the war as a member of the Coal Distribution Committee of this city. But the real reason was that if he had been present I wanted to ask him a question which Dr. Levinstein, as Deputy for the Lord Mayor to-night, may possibly be able to answer. I wanted to ask the Lord Mayor if he could solve a difficulty which is in my mind almost every year as Christmas approaches—it is a difficulty which has a certain sinister sound, I know. My question is: Why is it that so many people, when Christmas approaches, in order to secure sufficient coal to tide them over the festivities, always join slate clubs?

In the absence of the Lord Mayor, I am very pleased to be able to couple the name of my friend Dr. Levinstein with this toast. As I have said, we welcome him to-night as a Lord Mayor of the future, but also we greet him as one who has done much in industry, and nowhere is this work more recognised than in the University of Liverpool.

I listened this afternoon during the Presidential Address to some kindly criticisms of the modern Universities, in that we do not train our students in the right way to equip them for entering industry. I venture to think that one all-important factor was forgotten when these criticisms were made, namely, the psychology of the student. In Liverpool, for example, we have a large school of chemistry, but very few of our students have the *flair* for chemical engineering, nor desire to become chemical engineers. Still, they come to us full of enthusiasm, keen to follow other paths; I do not blame myself for my encouragement of them, for such enthusiasm is a precious thing, and I hesitate before persuading a student to follow a career to which he does not aspire.

In Dr. Levinstein we find a keen member of the Education Committee of this city, and one who is more than interested in that remarkable institution, the Manchester School of Technology. As External Examiner, I can speak very highly of its work, and

can say that Manchester has every reason to be proud, not only of her life and her culture, but also of her College of Technology. It is very appropriate, seeing that the Lord Mayor cannot be here, that the name of Dr. Levinstein, who is so much a part of that for which we stand, and who has so great a keenness for the technological interests of this area, should be coupled with the toast of "The City of Manchester."

In responding, Dr. H. LEVINSTEIN said :—

I would have you know, in the first place, that I am not Lord Mayor of Manchester. In parts of Professor Baly's charming speech I realised that he realised that I was not Lord Mayor. In other parts I was not so sure. It is well that you should understand this point, and that you should also appreciate the fact that Professor Baly's other hints as to possibilities are also the outcome of his own very versatile brain. I am, indeed, a member of the Manchester Corporation, alas! I am but the bottom but two in the class. There are just two below me, and the reason for that is that we tossed up as to who should have the last of the three places and I happened to come out on the top. I don't know whether you know what the Lord Mayor of Manchester really is. A schoolboy in a Sunday-school class was asked what frankincense was. He answered correctly, but when asked what was myrrh, had to confess that he didn't know. But one little chap cried out: "I know, please, teacher. He's the boss of the town." So that, having no qualification whatever for responding to the toast from its civic side, even as an old member of the Chemical Society, I feel I am in rather an anomalous position.

I notice here to-night people who were professors of mine in the past, and at least one demonstrator, and it seems rather an extraordinary thing for me to stand up here as representative of the Lord Mayor and thank you, the Chemical Society, and my revered instructors, for coming to visit this city. Of course we who know the locality are quite aware that there is nothing in the suggestion about Manchester being chosen for this, the first Provincial dinner, because the Grand National is being run at Aintree to-morrow. There are other vastly more important reasons. I remember two years ago, when Professor Treadwell came over here from Zurich, he was simply delighted with the intellectual life and atmosphere he found in Manchester. I am an old student of Zurich, and I have always regarded it as being a great centre of culture from a general and a scientific point of view, but when Professor Treadwell came here he was enamoured

of the activities which he found in the life of Manchester. I am rather inclined to believe that this was because of the extraordinarily active chemical life of Manchester, and because this city is the centre of a very large chemical industry, and am convinced that this is the real reason why you did us the very great honour of choosing this city to be the first in which you hold a provincial meeting.

As regards our "inferiority" to Liverpool, it is perfectly true that on occasion we are under the disagreeable necessity of breathing the air wafted from the salubrious city of Liverpool, of which Professor Baly is an adopted citizen. But I would have you know that when the Chemical Society comes to Manchester we manage to arrange to have an easterly wind. Professor Baly has wisely come to Manchester to-night—we are delighted to see him—where he will have the gratification of knowing that had he stayed in Liverpool he would have had to breathe the air wafted over this gathering.

I am not sure I am competent to reply to Professor Baly's remarks regarding our tramways and our housing. The Lord Mayor would probably have answered them differently. I am all in favour of buses, whilst he is deeply committed to trams. And in regard to the housing question, I know I should not respond in the same words as the Lord Mayor himself would use. I well remember being present as a very junior member at the meeting of the Manchester Corporation which discussed a scheme the Lord Mayor had very much at heart. That was the Wythenshawe extension scheme. That scheme was defeated by one vote. I voted against it.

I would, however, say on behalf of the Corporation of Manchester that we feel it to be a great distinction that you should have come here for this meeting, and I am sure the Lord Mayor would have wished to be here in order to show the world of chemistry how the citizens of Manchester—chemists and non-chemists—appreciate what the country and this county owe to chemistry. I regret, with you, that he was suddenly called away, for he could have told you himself that the people of this city take the visit of this great Society as a compliment not only to the city and its life and work, but to its wonderful educational establishments. I thank you, Professor Baly, for the way in which you have proposed this toast, and you, ladies and gentlemen, for the kind way in which you have received it.

Professor J. F. Thorpe, C.B.E., F.R.S., who proposed the toast of "Professor H. B. Dixon, C.B.E., F.R.S., on the Fiftieth Anniversary of his election to the Chemical Society," said :—

Unlike some of those who have preceded me, I have known for three weeks that I should have the honour of proposing this toast. I cannot say that I have prepared a speech, because the toast allotted to me of "The Health of Professor Dixon on the Fiftieth Anniversary of his election to the Chemical Society" is an exceedingly easy one to deal with owing to the wealth of matter supplied by his remarkable record.

I feel that many of us who sit on that very uncomfortable bench of the Chemical Society and watch those young men file before the presidential chair little think how famous some of them may become. The Secretary first of all announces their names to the President. Sometimes he catches the name and sometimes he doesn't, but he takes their hand and they are thus made Fellows of the Society. I often feel that those of us who have been on the bench on these occasions must have had some Dixons passing before us without recognising the privilege we were sharing in thus admitting them to the Society.

Thus when Harold B. Dixon, on the 3rd of April, 1876, passed before that presidential chair, few of those present realised what an exceptional man was coming into the Society. On the same occasion Bernard Dyer and Dugald Clarke were elected Fellows. Since his introduction to the Chemical Society, Professor Dixon has been on the Council four years and been Vice-President three years, and then filled the office of President for two years. I have had the honour only on very rare occasions to occupy the presidential chair. I can assure you it is the most uncomfortable chair in London. For any president to sit there for two years must call for a degree of vitality which few of us possess. After that he served as Vice-President for periods of ten years and three years, making altogether service to the Society of twenty-two years.

Although I have not had the great privilege of being a student of Professor Dixon's, I was able at an early age of my career to come under his notice. In 1895 I came to Manchester and was able to profit by my association with him. One of the great achievements of Professor Dixon, amongst many others, was the fact that he induced Perkin to come to Manchester, and between them, to build up in this great city and great University a School of Chemistry which is pre-eminent—that is the wrong word—I should say unique as regards chemical research. Manchester was unique not only because she had carried out those remarkable and almost innumerable researches under the direction of Dixon and Perkin, but because she set the example to other institutions in this country and in other countries, too. All have followed more or less successfully the example thus set.

The foundation work done by Roscoe and Schorlemmer was carried on by Dixon and Perkin until the Chemical Department of the University of Manchester won the great position it holds to-day.

Of course, those days were not without friction. There were occasions on which great minds clashed—the occasion, for instance, when Perkin ran Dixon out at cricket. It is said that Dixon's remarks on that occasion were certainly unchemical. But what you have to realise is this: That Professor Dixon not only carried out great and far-reaching researches, but became the scientific father of a great number of other researchers. He is father, for example, of that very healthy and promising offspring, our present President, Professor Baker, and also the scientific father of our late President, Colonel Crossley. I have not been able to find that Professor Dixon condescended to carry out organic research. Well, he was able, without doubt, to instil into his students the desire to carry out organic research.

Not only is Professor Dixon the father of chemists, but he is the father of subjects. He is the father of fuel technology, a subject which is becoming of increasing importance in this country. Wherever I have been I have met pupils of Professor Dixon's. When I was in India I met them everywhere where chemists are likely to be met. I found them in America, too, and all hoping that their scientific father would continue his experiments so as to produce alcohol as a fuel.

What I want to say is this: That in proposing this toast I do so principally on behalf of all his old students—students he has trained and who owe everything to him—also for those who came under his influence in early life, an influence which they can never forget and which remains as an abiding force with them. Of course, I propose it also, and no less heartily, on behalf of the general body of Fellows of this Society, including those—if there are any—who have not directly or indirectly come under his personal influence. On their behalf and on behalf of all here I propose this toast: "The Health of Professor Dixon on the Fiftieth Anniversary of his election to the Chemical Society."

Professor H. B. Dixon said in reply:—

By adding me to that roll of senior past-presidents you have honoured at your annual dinners with a special toast, your kindness has placed me in a terribly isolated position—splendidly isolated, I ought to have said. Unlike Germany knocking at the door of the League of Nations—I would rather have waited until I could be joined by others, since my own nearest contemporaries, Meldola

and Ramsay, alas, have gone before. But as no Power—from China to Peru—has maintained a veto, I stand before you in this isolated—if jubilant—position. I think the reason is very largely because you thought this occasion an appropriate one to pay honour to the Manchester University, which has had on its roll—including the *Dii Majores*, Frankland and Roscoe, Russell and Thorpe—just over one-fifth of the presidents of this Society. And perhaps one other reason had weight with your committee. It can have fallen to the lot of very few teachers to see on the same day one of their old students leaving the chair of the Chemical Society and another old student elected in his place. That has been my singular fortune today: I can assure you that no teacher can look for a higher reward.

Professor Thorpe has passed in such kindly review the things I have attempted during the fifty years of my fellowship that I am frightened of disturbing the beautiful picture his words may have conjured up in your minds. I will leave this, I fear largely ideal, portrait, therefore, and try, if I may be permitted, to answer two questions that have often been put to me. The first, put by unscientific friends of my family: "How did you, brought up in a literary home,. come to be a chemist?" The other, put by scientific friends: "What does it feel like to be in an explosion-wave, since apparently you survived to tell the tale?"

Well, if it were permitted to answer these questions on so public an occasion, I should say luck had a good deal to do with both the experiences referred to.

Being head-monitor in a public school of the old sort where no taint of science ever filtered into the curriculum, I went up to Oxford with a school scholarship and the pleasing delusion that native wit would take me through "Classical Mods" without the necessity of reading the set books in Latin and Greek.

I can assure you that the months passed quickly, I might say "et militavi non sine gloria"—but most of my successes were only those of the football and cricket field; and the fatal day came all too soon when I was put on to translate passages from the unread Latin and Greek authors. The Latin I pass over, but the Greek I thought I had got the hang of—even if a few words had to be guessed at. It was obviously a battle-piece: "The archers, οἱ τοξόται, were hidden waiting for the signal. Then," I translated it, "they went over the top, while a cloud of missiles, some bursting like shells, fell in their ranks. They charged through the barrage, overturned something—I called it the palisade—and quickly routed the foe." When I related my experiences in

Hall that evening a quiet scholar remarked: "That piece seems familiar, but those missiles were vegetables, the bursting shells egg-shells, the things upset were costers' barrows, and τοξόται was the common name for policemen at Athens."

"Well," I said, "I've done with classics." "They seem to have done for you!" said my neighbour, an old school-fellow who had begun to prepare for a medical career. "Why don't you try chemistry?" "Well, what *is* chemistry?" I asked. He took a piece of some metal from his pocket, and said: "How could you find out what that is?" I said: "Weigh it and get its density." "No, that's mechanics," said my friend. "Well, see whether it would melt easily." "No, that's physics." "Well, how does chemistry get at it?" I asked. After a pause he said: "Chemistry just takes its inside out—and tells by the colour or the smell what it is."

Two days later I called on the Lee's Reader in Chemistry, told him my predicament and asked him if he would take me as a pupil. "Do you know any chemistry?" he said. "Not a word," I answered. Then he smiled and asked: "Were you by chance the classical student we discussed in Common-room to-day?" I said I thought it very likely, and asked him if it was possible, if one tried hard, to get through in chemistry. "I don't know," said he, "but it would be fun to try!"

It was fun—and a revelation, too! I should like to add that, from that day until he died a few years ago, I and mine had no firmer friend than my old Christ Church tutor, A. G. Vernon Harcourt.

Now the answer to the other question is easier. To the second question: "What does it feel like to be in an explosion-wave?" the answer is: "There is no feeling about it: it is an absolute blank."

Yes, I tried it—standing in front of a five-feet iron holder filled with electrolytic gas, when by a concatenation of accidents two of us managed to send into it an explosion-wave. That the thing had happened or must happen, I knew, for the flash was visible as it went through the "safety-tubes" duly provided. Suddenly all was blank—darkness and silence. Sensation had disappeared. Then, after an apparent interval of seconds, came the shock, the stinging of the flame and the curious crash of plate glass splitting into long fragments. By some miracle we had escaped the flying fragments of iron, lead, and glass, though we did not need to have our hair cut for many weeks. So you see there was not very much to tell.

I believe that experience was taken off in a caricature referred to

by Professor Thorpe: the cartoon also contained the portrait of a cricketer being run out by Professor Perkin. That was a shock, too; but I think it is true that there was silence, also, then—and not the unseemly ejaculations suggested by the asterisks and notes of exclamations added by the artist.

I have often wondered since whether one would not find in the explosion-wave a good vehicle to waft one over the Stygian stream instead of bargaining with Charon; unless indeed one's sudden arrival in a colloidal or gaseous state might disturb the equanimity of Minos or Rhadamanthus or whosever turn it was to occupy the bench. But lately I have found a better way. Not a hundred miles from University College, London, there is a quiet funeral emporium. A modest notice in the window says: "Our motor-cortège combines style with economy. *N.B. Distance and Destination no Object.*" Appearing then with this "cheap but stylish" equipage, I shall not attempt to persuade Minos that I have any positive excellencies or qualities, though I may subconsciously hope that he has taken note of Professor Thorpe's eulogies. But I shall urge that as a professor of chemistry I might claim three negative virtues which—considering that I held a Chair of Chemistry for nearly forty years and have had very great opportunities and often temptations to go wrong—might be pleaded in mitigation of punishment: First, I have never given expert evidence in a Court of Law; secondly, I have never discovered a new chemical substance with a long name; and lastly, I have never written an elementary text-book for the use of students.

I fear that Minos may reply: "Not a bad record, but what evidence, then, is there that you are a chemist?" Well, I shall answer proudly: "The Chemical Society gave me a jubilee toast," and with that imprimatur, for which I sincerely thank you, I shall hope to pass.

The President then read the following telegram received from Bangalore:—

"Greetings to President and all Fellows at Manchester dinner. Norris, Simonsen, Watson, and Forster."

Sir William Pope, K.B.E., F.R.S., in proposing the toast of "Our Guests," stated:—

This is the first time during its glorious history of eighty-five years that the Chemical Society has held its annual gathering outside the metropolis, and it is particularly appropriate that in breaking away from an old tradition the Society should have come to Manchester. We are here in the centre of the chemical industry of the country and in a city which maintains a University famous

for its association with such chemists as Frankland, Roscoe, Schorlemmer, and many others who are, happily, still with us. On the occasion of the Chemical Society banquet we are accustomed to welcome among us as guests members of the Cabinet, famous lawyers, distinguished soldiers, and others who have achieved eminence in walks of life which have but little association with chemistry. This evening, however, we have the honour of greeting as guests a number of gentlemen whose life-work is closely connected with the great object for which our Society stands.

The Lord Mayor had intended to join us this evening, but has been unfortunately prevented; in welcoming the Deputy Lord Mayor we shall all desire to pay a tribute to the solicitude which the Corporation of this great city has always shown for the cause of education, primary, secondary, and technical. No one who has watched the development of educational affairs for the last thirty or forty years could fail to have been impressed by the careful and enterprising interest which Manchester has for long taken in educational matters. It has led the whole country in many of those aspects of educational affairs and of scientific matters with which we as a Society are broadly and particularly concerned. Among us this evening are many representatives of the University of Manchester and the Principal of the College of Technology, one of the foremost of the large technical institutions in this country; the President of the Manchester Chamber of Commerce and the Chairman of the Manchester section of the Institute of Chemistry are with us, and the Society of Chemical Industry and the Society of Dyers and Colourists are also well represented. Whilst we greet all these gentlemen as our guests this evening, we recognise that many of them are closely connected with chemical matters, and indeed a number of them are old and valued Fellows of the Chemical Society.

It is a great delight to all of us, and more especially to those who in earlier days were associated with Manchester, to attend an annual meeting of the venerable Chemical Society in this great northern city. I trust that the precedent which has been set to-day will not be allowed to lapse, and that we shall at some future time hold our annual gathering in another of the great industrial centres of the Empire.

I have much pleasure in proposing the "Health of our Guests," coupling the toast with the name of Sir William Clare Lees, who, as a Director of the Bleachers' Association, well realises the importance of chemical science to the staple industries of Lancashire.

Sir WILLIAM CLARE LEES replied :

I rise with some diffidence to respond to this toast when I contemplate the list of those whom the last speaker enumerated as guests—those for whom I am charged to answer.

One of the difficulties of the one who responds to the toast of the guests is that he is, usually, speaking for quite a number of people whom he has not been able to consult, and he does not know what they would like him to say on their behalf. I can, however, at least say this : every one of us is very grateful to you, Mr. President, and your fellow members, for having asked us to be your guests. We appreciate not only the hospitality that you have offered us so lavishly to-night, but also the distinct honour you have conferred upon us by singling us out as being fit and proper persons to sit at this august board.

This is not the first time that I have felt personally under a sense of obligation to members of your Society. I well remember some two or three years ago having the pleasure of waiting upon a member of your Society and telling him that, at the unanimous wish of his fellow-directors of the Manchester Chamber of Commerce, we invited him to become President of that great institution —I refer to my friend Dr. Rée.

It was a most happy and fortunate coincidence that the scientific life of your Society and the commercial life of this great city should be linked together and brought into closer harmony and sympathy by his occupancy of that high office, which he filled with such dignity and credit to himself, to your Society, and to the Chamber of Commerce.

I used to feel some diffidence in going amongst scientific people, because one always felt that they had, so to speak, a second pair of eyes which enabled them to peer into things of which we ordinary mortals were ignorant. But a few weeks ago I received a good deal of comfort and consolation on that point when I was the guest of another of your members, Dr. Levinstein, who is a versatile person, as you know. Amongst his other offices he is president this year of the Manchester Literary and Philosophical Society, and he was good enough to ask me to be one of his guests. I was consequently amongst literary and philosophical people. A very distinguished professor, in order to put those of us who were strangers at the table more at our ease, assured us that we need not have any fear about literary and philosophical people. They were quite ordinary mortals, he said. He reminded us that on one occasion he saw two literary doctors discussing very earnestly together. Walking up to them to find out what was the great subject they

were discussing, he found that they were debating the abstruse question whether it was correct to say the hen was sitting or setting. By and by they were joined by a philosophical member, who remarked that he didn't mind at all whether it was correct to say a hen was sitting or setting. What he always wanted to know when he heard a hen cackling was whether it was laying or lying.

Well, you know that when those of us who are administrators of business enterprises are brought into touch with the discoveries and achievements of chemists we always want to know, not in a literal sense nor in a scientific sense, but in a practical and applicable sense, whether he is "laying or lying." It makes a very great deal of difference. There are a great many very wonderful discoveries of science which perhaps lack of enterprise and ability on the part of commercial people, or because there is some definite drawback in the possible application, makes it impossible to translate into commercial successes, and I am quite sure that chemists must often feel that the executive end of business life blocks the way of scientific discovery and progress. To some extent and in some directions I think that is sometimes true; but you must remember this: It is not always—indeed, is not usually—a question with business people, in applying a new process or introducing a new method, as to whether they will lead to great profits. It is whether they can be put upon the markets of the world in a continuous and progressive manner, because the revenue and conditions which have to be provided for carrying those processes into permanent use are only very slightly governed by profit. They are governed by conditions which mean the weekly provision of volumes of wages, of raw material, of the constant finding of ordinary paraphernalia of business life, and all the other obligations which go to make up the cost of production. These very mundane considerations have to be taken into account before discoveries and ideas can be brought into the daily use of the consuming people of the world.

I do think that we who are engaged in the business life of this country have much to warn ourselves against and to guard against in the present day—the losses and depression of the post-war period, the sense of the crushing burden of taxation, and so forth—they are ever present in our minds. But we should be careful lest the depression of the post-war period should be so prominent in our minds that we, by lack of enterprise and foresight, may fail to avail ourselves of the progress and uplift of the scientific discoveries which you have been pouring into our laps in such profusion. And there is this encouragement to the scientific minds and brains of the time, that there is surging upwards, not

only in this country, but also in the countries of the world, a growing population of men and women who are not depressed by the considerations which depress us, who have only seen the shadow of the war, who have fresh ideas of human progress, and energetic enthusiasm to apply them. They will either force us forward or drive us out. That force will make for the progress of the world. I believe that the possibilities of science in the future are great and mighty in their influence on progress, and if by your having this gathering here to-day you can bring to the minds of those of us who are round the table—those perhaps not so closely associated with your purely scientific work—ideas which will lead us to put into practical use the scientific discoveries such as your Society has laid up, your journey will not have been in vain, it will have done us all good. I thank you, on behalf of my fellow guests, for the hospitality you have extended to us to-night, for the very delightful entertainment you have afforded, and for the cordiality with which you have associated yourselves with this toast.

Dr. Arthur W. Crossley, C.M.G., C.B.E., F.R.S., then rose and said :

I should like, Mr. President, if you will permit me, to propose a toast which is not on the list. When the Chemical Society holds its meetings in London the arrangements are made by the officers. It is considered a part of their duty, and they perform that duty with efficiency and goodwill. But when the Chemical Society arranges for its meetings in the provinces, it is necessary, as in the present instance, to appoint a local secretary, and this office has been filled this year by Mr. L. B. Tansley, one of our local Fellows. It is true that we have had a local committee; also true that the committee has met twice and has made suggestions for to-day's functions: but the actual carrying out of the arrangements has been entirely effected by Mr. Tansley. He has been in daily contact with me and has reported his actions to me, which have in all cases seemed so excellent that no criticism has been possible. The task has not been without its difficulties, which commenced to be of a serious nature at two o'clock yesterday afternoon, when Sir Martin Conway informed us that he would not be able to be present. Telegrams then began to arrive from other speakers who could not attend. But Mr. Tansley had been through an experience which made him quite equal to this emergency, and he has completed his task with remarkable success. It is certainly in his favour that Manchester citizens are noted for their willingness to come forward and assist on such occasions as the present. But I would again repeat that the whole of the arrangements for this

gathering have been in Mr. Tansley's hands, and I think it is our duty to offer him our cordial thanks for the trouble which he has taken to make our meetings successful.

Mr. L. B. TANSLEY replied :—

I must thank you very much indeed for the very kind words which have been said. I have felt it an honour to be asked to do this, and have had very much pleasure in doing what I could. It would have been so much more difficult had it not been for the great assistance given by several local Fellows of the Society, by Dr. Crossley himself, and by the Secretaries. Thank you very much.

Ordinary Scientific Meeting, Thursday, April 22nd, 1926, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
Bed Caudwell.....	April 22nd, 1903.	March 16th.
Charles Harrison	Dec. 7th, 1916.	March 22nd.
William J. Lewis	Nov. 18th, 1869.	April 16th.

The PRESIDENT announced that :

1. The following Committees for 1926–1927 had been appointed by the Council :

Finance Committee : J. L. Baker, F. P. Dunn, C. A. Hill, G. T. Moody, J. C. Philip, R. H. Pickard, W. P. Wynne, and the Officers.

House Committee : J. L. Baker, Sir Herbert Jackson, Sir Robert Robertson, Alexander Scott, J. M. Thomson, Sir William Tilden, and the Officers.

Library Committee : T. A. Henry, J. R. Partington,* Sir Thomas K. Rose, Alexander Scott, N. V. Sidgwick, J. F. Spencer, and the Officers, together with representatives of contributing Societies.

Publication Committee : E. C. C. Baly, H. Bassett, H. V. A. Briscoe, H. W. Dudley, U. R. Evans, J. J. Fox, R. W. Gray, A. J. Greenaway, T. A. Henry, C. K. Ingold, H. King, H. McCombie, W. H. Mills, T. S. Moore, G. T. Morgan, K. J. P. Orton, J. R. Partington, J. C. Philip, R. H. Pickard, F. L. Pyman, R. Robinson, N. V. Sidgwick,* and the Officers.

Research Fund Committee : A. J. Allmand, E. C. C. Baly, F. E. Francis, W. N. Haworth, C. K. Ingold, W. H. Mills, F. L. Pyman,

* Chairman.

Sir Robert Robertson, N. V. Sidgwick, Sir James Walker, and the Officers.

2. The following Address of Congratulation had been sealed and will be presented to the Associazione Italiana di Chimica Generale ed Applicata on the occasion of the Second National Congress of Pure and Applied Chemistry and the Celebrations of the Centenary of the Birth of Stanislao Cannizzaro to be held in Palermo from May 22nd to June 1st, 1926. The Society will be represented at the functions by Professor H. E. Armstrong and Sir William Pope.

THE CHEMICAL SOCIETY

to

The President and Members of the
Associazione Italiana di Chimica Generale ed Applicata.

On the occasion of the second National Congress of Pure and Applied Chemistry and the Celebration of the Centenary of the Birth of Stanislao Cannizzaro, we, the President and Fellows of the Chemical Society send to you, and through you to all Italian chemists, our most cordial greetings and felicitations, and our best wishes for the success of your Congress and the continued prosperity of Chemical Science and Industry in Italy.

Especially is it our desire to join with you in paying homage to the immortal memory of the illustrious Stanislao Cannizzaro, Italian patriot and world renowned man of Science. When in 1858 he developed and extended the ideas of his great compatriot, Amadeo Avogadro, and applied them to the whole domain of chemistry, the long reign of doubt and confusion vanished from our science, and the true atomic and molecular kingdom of modern chemistry was founded. If Newton completed the work so famously begun by the illustrious Galileo, it was Cannizzaro who completed so magnificently the work begun by John Dalton.

As our distinguished Fellow, Sir William Tilden, said in concluding his Cannizzaro Memorial Lecture, " On the scutcheon which bears the names of Galileo and Torricelli, of Galvani and Volta, of Avogadro and Piria, Italy may proudly write another glorious name, Stanislao Cannizzaro."

It is a source of deep satisfaction to us to recollect that our Society was quick to recognise the outstanding value of his work, for in 1862 Cannizzaro was elected an Honorary Fellow of the Chemical Society, whilst in 1872 we invited him to give the second Faraday Memorial Lecture.

The contemplation of the life and work of your great fellow-countryman must ever be a source of inspiration, alike to the

student and to the historian of our science. Not only did he live to see his pioneer work of 1858 become the universally recognised foundation of chemical philosophy, but by his important contributions to organic chemistry, his establishment of many centres of chemical research in Italy and his long life devoted to scientific development and eminent public service in his native country, he won the gratitude and esteem, not only of his own fellow-countrymen, but of chemists and men of science throughout the world.

When you meet at Palermo, the birthplace of Cannizzaro, to do honour to his memory and to found a monument in public recognition of his undying fame, be assured that all British chemists will join with you in paying reverent homage to the memory and the work of a very great and distinguished Italian.

Signed on behalf of the Chemical Society,

H. Brereton Baker, *President.*
Jocelyn Thorpe, *Treasurer.*
T. Slater Price, C. Stanley Gibson, } *Secretaries.*
F. G. Donnan, *Foreign Secretary.*

(L.S.)

Sealed in Council this Twenty-second day of April, One Thousand Nine Hundred and Twenty-six.

3. The Faraday Society is organising a General Discussion on "Explosive Reactions in Gaseous Media," to be held on May 13th, from 2.30 p.m., at the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. 1. The discussion will deal with explosive reactions considered generally and also in reference to internal combustion engines. Fellows of the Chemical Society are invited to attend the meeting and take part in the discussion. Full particulars may be obtained from the Secretary of the Faraday Society, 90, Great Russell Street, W.C. 1.

The following were formally admitted Fellows of the Chemical Society: Thos. J. E. Gardner, L. G. Manchester, B. W. Town, H. A. Mayes, and J. Holloway.

Certificates were read for the first time in favour of:

James Henry Adamson, M.A., c/o Wilts. United Dairies, Ltd., Bason Bridge, Highbridge, Somerset.
John Clark Andrews, B.Sc., University College, Auckland, New Zealand.
Theodore Cohn, B.Sc., A.R.C.S., c/o Medway Oil and Storage Co., Ltd., Isle of Grain, Kent.
Cecil John Turrell Cronshaw, B.Sc., Alnwick, Prestwich Park, Manchester.
John William Croxford, 73, Brighton Road, East Ham, E. 6.
Bertram Eastwood Dixon, B.Sc., A.I.C., Springfield, Great Bookham, Surrey.
William Harry Grindley, B.A., B.Sc., 24, Granville Terrace, Stone, Staffs.

John William Hobday, 535, Liverpool Road, Irlam, Manchester.
Trevor Lovett, M.Sc., 6, Cerdin Avenue, Pontyclun, Glam.
Eric Charles Martin, 45, Regent Square, W.C. 1.
John Frederick Newman, Mount Royal Avenue, St. John's, Newfoundland.
Maurice Charles Oldham, 100, Roose Road, Barrow-in-Furness.
Arnold Thornton Peters, M.Sc., Arnside, Wigan Road, Bolton.
Ralph Skinner Back, Keelby, Habrough, Lincs.
Gubbi Anantha Raman, B.Sc., Shimoga, Mysore State, India.
Ronald Ashley Richards, 10, Orange Hill Road, Heaton Park, Manchester.
John Smart, 249, Friern Road, East Dulwich, S.E. 22.
Prithir Nath Waghray, M.Sc., Shraddha Bhawan, Residency Bazar, Hyderabad, Deccan, India.
Michael Zvegintzov, Corpus Christi College, Oxford.

The following certificate has been authorised by the Council for presentation to ballot under Bye-Law I (2):

Moses Bruchstein, Ph.M., The New British Pharmacy, Jerusalem, Palestine.

The following papers were read:

"An analysis of the ether. Part II. The magnetic fields in atoms." By W. C. Reynolds.

"Investigations on the dependence of rotatory power on chemica constitution. Part XXIX. The resolution of sulphoxides into their optically active forms." By P. W. B. Harrison, J. Kenyon, and H. Phillips.

"The solubility of beryllium oxide in solutions of its salts." By N. V. Sidgwick and N. B. Lewis.

RESEARCH FUND COMMITTEE.

A meeting of the Research Fund Committee will be held in June next. Applications for Grants, to be made on forms which can be obtained from the Assistant Secretary, Chemical Society, Burlington House, W. 1, must be received on or before Tuesday, June 1st, 1926.

All persons who received grants in June, 1925, or in June of any previous year, whose accounts have not been declared closed by the Council, are reminded that reports must be returned by June 1st.

LIST OF FELLOWS, 1926.

The Council has decided that the List of Fellows for 1926 shall not be published.

List of Papers, or Abstracts thereof, received between March 18th and April 22nd, 1926. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"The temperature effects on mixing liquids." By W. M. MADGIN, H. V. A. BRISCOE, and J. B. PEEL.

"The chemistry of the three-carbon system. Part V. The alkylation of unsaturated ketones." By G. A. R. KON.

"A method of inserting the thio-aryl group." By L. G. S. BROOKER and S. SMILES.

"The constitution of α-fructose diacetone." By C. F. ALLPRESS.

"An improved hydrogen sulphide generator." By H. G. DENHAM and J. PACKER.

"The nitration of the 2-, 4-, and 6-chloro-, and the 2 : 4- and 2 : 6-dichloro-3-hydroxybenzaldehydes with some consequences of vicinal substitution." By H. H. HODGSON and H. G. BEARD.

"The mercuration of *o*-nitrotoluene." By H. BURTON, F. HAMMOND, and J. KENNER.

"Mono- and di-bromo-derivatives of quinaldine and nitroquinaldines and their hydrolysis products." By D. L. HAMMICK.

"The specific heats of hydrocyanic acid. A reply." By J. R. PARTINGTON.

"The constitution of polysaccharides. Part X. The molecular unit of starch." By J. C. IRVINE and J. MACDONALD.

"Experiments on the synthesis of anthocyanins. Part I." By A. ROBERTSON and R. ROBINSON.

"A synthesis of pyrylium salts of anthocyanidin type. Part IX. Some hydroxyflavylium salts." By A. ROBERTSON and R. ROBINSON.

"Experiments on the synthesis of cryptopine and protopine. Part I." By R. D. HAWORTH and W. H. PERKIN.

"The condensation of phenols with chloral." By F. D. CHATTAWAY.

"Nitrosation of phenols. Part III. Nitrosation of the 4-halogeno-*o*- and -*m*-cresols, and oximation of the 4-halogeno-3 : 6-toluquinones." By H. H. HODGSON and F. H. MOORE.

"Concerning the constitution of α-methylrhodim." By J. TCHERNIAC.

"Studies with the microbalance. Part IV. The photochemical decomposition of silver iodide." By E. J. HARTUNG.

"The doubtful existence of aurous oxide." By W. B. POLLARD.

"The constitution of sucrose. Part I. Oxidation of tetramethyl γ-fructose." By G. MCOWAN.

"Periodic phenomena at anodes of copper and silver." By E. S. HEDGES.

"Sugar carbonates. Part II. Derivatives of arabinose and xylose." By W. N. HAWORTH and W. MAW.

"The order of removal of manganese, chromium, iron, cobalt, and nickel from amalgams." By A. S. RUSSELL, D. C. EVANS, and S. W. ROWELL.

"The positions of tungsten and molybdenum in the normal potential series." By A. S. RUSSELL and S. W. ROWELL.

"Extinction of methane flames by diluent gases." By H. F. COWARD and F. J. HARTWELL.

"Investigations on the dependence of rotatory power on chemical constitution. Part XXX. The resolution of methyl*cyclo*hexylcarbinol." By A. DOMLEO and J. KENYON.

"The catalytic decomposition of solutions of sodium hypochlorite by finely divided metallic oxides." By E. CHIRNOAGA.

"The precipitation of cadmium sulphide from aqueous solutions of cadmium chloride in the presence of hydrochloric acid and other chlorides." By S. KRISHNAMURTI.

"Optical activity and the polarity of substituent groups. Part IV. *sec.*-β-Octyl esters of *o*-, *m*-, and *p*-methoxy- and nitro-benzoic acids." By H. G. RULE and A. H. NUMBERS.

"The direct synthesis of nitrous oxide." By D. L. CHAPMAN, R. A. GOODMAN, and R. T. SHEPHERD.

"A new series of bismuthyl derivatives of hydroxy-acids." By G. A. COLLINSON, E. PHILLIS, and J. B. COHEN.

"Piperitone. Part VIII. The condensation of piperitone with aldehydes." By J. C. EARL and J. READ.

"Resins in coal. Studies in the composition of coal." By W. FRANCIS and R. V. WHEELER.

The following is a list of donations to the Publications Fund received from Chemical Manufacturers and other Firms.

	£	*s.*	*d.*		£	*s.*	*d.*
United Alkali Co., Ltd. . .	315	0	0	Howards & Sons, Ltd. . .	50	0	0
The Gas Light & Coke Co. .	150	0	0	Lever Bros., Ltd. . . .	50	0	0
Nobel Industries, Ltd. . .	120	0	0	J. Lyons & Co., Ltd. . .	50	0	0
Bradford Dyers' Association, Ltd.	105	0	0	May & Baker, Ltd. . . .	50	0	0
				The Mond Nickel Co., Ltd. .	50	0	0
Burroughs Wellcome & Co..	105	0	0	Parke, Davis & Co. . . .	50	0	0
Albright & Wilson, Ltd. .	100	0	0	Tootal Broadhurst Lee Co., Ltd.	50	0	0
Birmingham University .	100	0	0				
Boots Pure Drug Co., Ltd .	100	0	0	Anonymous	42	0	0
Hopkin & Williams, Ltd. .	52	10	0	Borax Consolidated, Ltd. .	26	5	0
South Metropolitan Gas Co..	52	10	0	British Cotton & Wool Dyers' Association, Ltd. . . .	26	5	0
Watney, Coombe, Reid & Co., Ltd.	52	10	0				
				The British Drug Houses, Ltd.	26	5	0
Hardman & Holden, Ltd. .	50	0	0				

	£	s.	d.
The Clayton Aniline Co., Ltd.	26	5	0
The Distillers Co., Ltd.	26	5	0
Cadbury Bros., Ltd.	25	0	0
J. & P. Coats, Ltd.	25	0	0
A. Guinness Son & Co., Ltd.	25	0	0
Imperial Tobacco Co., Ltd.	25	0	0
John Miller & Co.	25	0	0
Mitchells & Butlers, Ltd.	25	0	0
Allen & Hanburys, Ltd.	21	0	0
W. J. Bush & Co., Ltd.	20	0	0
The Cassell Cyanide Co., Ltd.	20	0	0
Gurney & Jackson	20	0	0
Ansells Brewery, Ltd.	10	10	0
The Calico Printers' Association, Ltd.	10	10	0
Carreras, Ltd.	10	10	0
J. & J. Colman, Ltd.	10	10	0
Goodall, Backhouse & Co.	10	10	0
Midland Tar Distillers, Ltd.	10	10	0
T. & H. Smith, Ltd.	10	10	0
Wright, Layman, & Umney, Ltd.	10	10	0
Stafford Allen & Sons, Ltd.	10	0	0
Duncan, Flockhart & Co.	10	0	0
J. S. Fry & Sons, Ltd.	10	0	0
Hull Brewery Co., Ltd.	10	0	0
McVitie & Price, Ltd.	10	0	0
Murphy & Son, Ltd.	10	0	0
John Nicholson & Sons, Ltd.	10	0	0
Russells Gravesend Brewery, Ltd.	10	0	0
Scottish Dyes, Ltd.	10	0	0
Staveley Coal & Iron Co., Ltd.	10	0	0
Joshua Tetley & Son, Ltd.	10	0	0
Whiffen & Sons, Ltd.	10	0	0
Benn Brothers, Ltd.	5	5	0
J. & A. Churchill	5	5	0
Hickson & Partners, Ltd.	5	5	0
S. H. Johnson & Co., Ltd.	5	5	0
John W. Leitch & Co., Ltd.	5	5	0
H. K. Lewis & Co., Ltd.	5	5	0
Liverpool Nitrate Co., Ltd.	5	5	0
Oxford University Press	5	5	0
John Riley & Sons, Ltd.	5	5	0
Spencer, Chapman, & Messel, Ltd.	5	5	0
Thermal Syndicate, Ltd.	5	5	0
J. Bibby & Sons, Ltd.	5	0	0
A. Boake, Roberts & Co.	5	0	0
Burgess, Ledward & Co., Ltd.	5	0	0
R. Clay, Ltd.	5	0	0
The Cookson Lead & Antimony Co., Ltd.	5	0	0
J. & J. Cunningham, Ltd.	5	0	0
Wilfred E. Gooday (Vacuum Oil Co., Ltd.)	5	0	0
The Graesser-Monsanto Chemical Works, Ltd.	5	0	0
Harrington Bros., Ltd.	5	0	0
Locke, Blackett & Co., Ltd.	5	0	0
Macfarlane, Lang & Co.	5	0	0
Major & Co., Ltd.	5	0	0
Murgatroyd's Salt Works, Ltd.	5	0	0
Reckitt & Sons, Ltd.	5	0	0
Peter Spence & Sons, Ltd.	5	0	0
W. Younger & Co., Ltd.	5	0	0
Arcos, Ltd.	3	3	0
Baird & Tatlock (London), Ltd.	3	3	0
Barclay, Perkins & Co., Ltd.	3	3	0
F. W. Berk & Co., Ltd.	3	3	0
William Blythe & Co., Ltd.	3	3	0
Thomas Horrocks & Sons, Ltd.	3	3	0
United Water Softeners, Ltd.	3	3	0
F. E. Becker & Co.	2	2	0
W. Burton & Sons	2	2	0
The Colne Vale Dye & Chemical Co., Ltd.	2	2	0
Henry Ellison, Ltd.	2	2	0
Groves & Whitnall, Ltd.	2	2	0
Adolph Hess & Bro., Ltd.	2	2	0
Adam Hilger, Ltd.	2	2	0
W. C. Holmes & Co., Ltd.	2	2	0
James A. Jobling & Co., Ltd.	2	2	0
B. Laporte, Ltd.	2	2	0
Massey's Burnley Brewery, Ltd.	2	2	0
Paine & Co., Ltd.	2	2	0
Reynolds & Branson, Ltd.	2	2	0
The "Sanitas" Co., Ltd.	2	2	0
James Shipstone & Sons, Ltd.	2	2	0
Simon-Carves, Ltd.	2	2	0
Smith, Garrett & Co., Ltd.	2	2	0
Société Commerciale des Potasses d'Alsace	2	2	0
Stainsby & Lyon, Ltd.	2	2	0
T. Taylor (Oliver Wilkins & Co., Ltd.)	2	2	0
J. W. Towers & Co., Ltd.	2	2	0
Typke & King, Ltd.	2	2	0
Walker & Homfrays, Ltd.	2	2	0
The West Cumberland By-products Co., Ltd.	2	2	0
Alfred White & Sons, Ltd.	2	2	0
Williams Bros. & Co.	2	2	0
The Yorkshire Dyeware & Chemical Co., Ltd.	2	2	0
British Synthetics, Ltd.	1	1	0
Brotherton & Co., Ltd.	1	1	0
J. M. Collett & Co., Ltd.	1	1	0
The Dorr Company	1	1	0
Hadfields (Merton), Ltd.	1	1	0
J. & D. Hamilton, Ltd.	1	1	0
J. E. C. Lord (Manchester), Ltd.	1	1	0
T. Lye & Sons	1	1	0
Oswald M'Cardell & Co.	1	1	0

	£	s.	d.
Frank Myatt, Ltd. . . .	1	1	0
L. Oertling, Ltd. . . .	1	1	0
Page & Overton's Brewery, Ltd.	1	1	0
Pronk, Davis, & Rusby, Ltd.	1	1	0
Usher's Wiltshire Brewery, Ltd.	1	1	0
Royal Holloway College .	1	0	0
	£2492	19	0

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, MAY 6TH, 1926.

N.B. The names of those who sign from "General Knowledge" are printed in *italics*.

ALLAN, JAMES, 36, High St., Chorlton-on-Medlock, Manchester. British. Research Student. M.A., B.Sc. (St. Andrews), and experience in research work. (*Signed by*) Robert Robinson, Arthur Lapworth, Frederick Challenger.

ANDERSON, ARTHUR PERCIVAL, The High School, South Shore, Blackpool. British. Principal of the above School. B.Sc. (Internal), London Univ. Licentiate of the College of Preceptors. (1) 16 Years' experience as a Science Master. (2) Chairman of Technical School, Evening Schools, and Governors of Blackpool Municipal Secondary School. (3) I have built and fully equipped a Chemical Laboratory at this School, with bench accommodation for twenty-four boys and corresponding apparatus. I take senior Science of the School (130 boys). (*Signed by*) John H. Chew, J. B. Coleman, F. H. Lowe, J. C. Crocker.

ANDERSON, BASIL WILLIAM, "Moorlands," Woldingham, Surrey. British. Chemist to The London Chamber of Commerce. B.Sc. from King's College, London (2nd Class Honours Chemistry), 1924. Abstracting for the Bureau of Chemical Abstracts since December 1924. (*Signed by*) A. G. Bloxam, Samuel Smiles, Bernard Dyer.

ARMSTRONG, EDWARD SIDNEY, 69, Breakspears Road, Brockley, S.E. 4. British. Assistant Master, County Secondary School, Brockley. B.Sc. (Chemistry), Durham University, 1914. Science Master, Bishop Wordsworth's School, Salisbury, 1919–21. Asst. Master, County Secondary School, Brockley, S.E., 1921— (continuing). (*Signed by*) J. Kenyon, Henry Phillips, J. Holloway, P. H. Robinson.

AYRES, REGINALD PERCY, 140, Hanley Road, N. 4. British. Science Teacher. B.Sc. (London). Am taking Post-graduate Course at Westminster College, and am desirous of keeping abreast with modern ideas of research. (*Signed by*) P. C. Austin, Gerald Druce, T. M. Lowry.

BARKER, FRANCIS GEORGE, 61, Crimicar Lane, Fulwood, Sheffield. British. Chief Analyst, H.M. Naval Ordnance Inspection Department, Sheffield. Student, Swindon and North Wilts. Technical School. Three years Junior Assistant Analyst, Great Western Railway Co.'s Laboratories, Swindon. Two years Assistant Analyst, and 3 years Senior Analyst, H.M. Inspector of Steel's Dept., Sheffield. Seven years Chief Analyst, H.M. Naval Ordnance Inspection Laboratories, Sheffield. (*Signed by*) Cecil H. Desch, W. R. Bird, T. C. Davison, C. H. Ridsdale, N. D. Ridsdale.

BELCHETZ, ARNOLD, Emmanuel College, Cambridge. British. Research Student. M.Sc. (University of South Africa). At present carrying out

research work at University of Cambridge. (*Signed by*) W. J. Pope, W. H. Mills, Richard Raper.

BJILMANN, EINAR CHRISTIAN SAXTORPH, Ostervoldgade 5, Copenhagen K, Denmark. Dane. Dr.phil. Professor of Chemistry in the University. Director of the Chemical Laboratory of the University of Copenhagen. *J.C.S.*, 1924, **125**, 1719 and 1954; 1925, **127**, 119. (*Signed by*) C. S. Gibson, T. Slater Price, Jocelyn Thorpe, W. P. Wynne.

CAHN, ROBERT SIDNEY, 25, Ashwood Avenue, West Didsbury, Manchester. English. Research Chemist (D.S.I.R. Investigator Grant). M.A. (Cantab.). Dr. phil. nat. (Frankfort). Part author with Prof. J. von Braun of following papers: *Ber.*, 1924, **57**, 908; *Ann.*, 1924, **436**, 262; *Festschrift d. phys. Ver.*, Frankfurt, 1925, 5 pages. Sole author, "Dissert." (Frankfurt), 1925. (*Signed by*) R. Robinson, Arthur Lapworth, J. C. Smith, G. N. Burkhardt.

COALES, WILLIAM DENIS, Melrose, Chiltern Rd., Dunstable, Beds. British. Head Science Master, The Grammar School, Dunstable. London B.Sc. (Pass), 1906. London B.Sc. (Honours, 1st Class in Chemistry), 1920. Science Master, King's College, Taunton, 1907–1909. Science Master, Dunstable Grammar School, 1909–1918. Assistant Chemist, Messrs. Riley and Harbord, Victoria St., and Demonstrator, Sir John Cass Technical Institute, 1918–1919. Science Master, Denstone College, Staffs., 1919–1921. Science Master, Dunstable Grammar School, 1921—present. (*Signed by*) E. H. Tripp, Charles A. Keane, Henry J. S. Sand.

CULLINANE, NICHOLAS MICHAEL, 27, Michael Street, Waterford, Ireland. British. Assistant Lecturer and Demonstrator in Chemistry, University College, Cardiff. B.Sc. (Chemistry) (Hons., N.U.I., 1917). M.Sc. (1918), and Ph.D. (1922) for research in chemistry. A.I.C. (1919); F.I.C. (1925). Research in Chemistry at University College, Dublin, 1918, 1919, 1920, and also 1923–1924. Assistant Lecturer and Demonstrator in Chemistry, University College, Aberystwyth (1920–1923). Assistant Lecturer and Demonstrator, University College, Cardiff (Oct. 1924—present). I have also carried out research during my terms at Aberystwyth and at Cardiff. List of researches: (1) "The Action of the Oxides and the Oxyacids of Nitrogen on Ethyl-*o*-tolyl-urethane" (*Sci. Proc. Roy. Dub. Soc.*, Vol. XVII (N.S.), p. 119). (2) "The Action of the Oxides and the Oxyacids of Nitrogen on Diphenylene Oxide" (*Sci. Proc. Roy. Dub. Soc.*, Vol. XVII (N.S.), p. 321). (3) "Some Derivatives of Stilbene" (*Proc. Roy. Irish Acad.*, Vol. XXXVI, B, p. 155). (4) "The Action of Reducing Agents on Some Polynitrodiphenylamines" (*Aberystwyth Studies*, Vol. IV, p. 209). (5) "Chromoisomerism in the Stilbene Series." (6) "A Synthesis of some Flavones" (not yet published). (7) "A Synthesis of Chalkones and Benzylidene-coumaranones" (not yet published). (Some of the above researches were carried out in collaboration with other workers.) (1) Abs., 1923, i, 322; (2) Abs., 1924, i, 534; (3) Not yet abstracted in *J.C.S.*; (4) Abs., 1923, i, 606; (5) *J.C.S.*, 1923, 2053. (*Signed by*) W. J. Jones, A. A. Read, E. P. Perman.

DANN, WILLIAM JOHN, Biochemical Laboratory, The University, Cambridge. English. Research Student at the School of Biochemistry, University of Cambridge. B.Sc. degree, Honours School of Chemistry, Class I, at the University of Sheffield. (*Signed by*) Douglas C. Harrison, W. P. Wynne, F. G. Tryhorn, G. M. Bennett, F. Gowland Hopkins.

DAVIS, GEORGE HENRY, 34, Bouverie Rd., N. 16. Analytical Chemist, Research Chemist, and representative for Maynards on the panels of Brit. Ass. Research. Student at Hackney Tech. Inst. (Day School), and later engaged by Thornett and Fehr of 27, Leadenhall St., E.C. 3., as analyst in

oils, fats, waxes, and soaps for 4 years, and present with Maynards, Ltd., as Works Chemist. Student of Organic Research at Hackney Tech. Inst. (Evening Inst.). (*Signed by*) G. A. Stokes, Ernest W. Wright, Thos. Macara, L. E. Campbell, *A. W. Stokes*.

DUNDEE, JAMES, 95, University Road, Belfast. British. Pharmaceutical Chemist. Member of Council Pharmaceutical Society, Northern Ireland. Teacher of Pharmacy and Materia Medica with the late Samuel Templeton, F.I.C., School of Applied Science. (*Signed by*) W. H. Gibson, J. Carroll Culbert, George Scott Robertson.

EVANS, ROBERT JONES, Waenllan, Penmachno, Bettws-y-Coed, N. Wales. British. Chemist, Government Laboratory. B.Sc. (Wales) with Honours, Class I, in Chemistry with Biochemistry. (*Signed by*) Robert Robertson, Geo. Stubbs, J. F. Halpin, T. W. Harrison, J. J. Fox.

EVERETT, JOHN GARWOOD, 39, Montserrat Rd., Putney, S.W. 15. British. Chemist. A.I.C., M.P.S. (*Signed by*) A. J. Ewins, A. Haythornthwaite, George Newbery, R. W. E. Stickings.

GARLICK, HARVEY SATCHELL, 15, Duke's Avenue, Chiswick, London, W. 4. English. Senior Assistant Chemist, Laboratory, Chiswick Works, London General Omnibus Co., Ltd. London University Matriculation and Intermediate Science Examination, King's College, London. Member of the Society of Chemical Industry. Student Member of the Institute of Chemistry. Chairman of the London Branch, Students' Section, Institution of Petroleum Technologists, 1925–1926. Assistant Chemist, H.M. Chiswick Laboratory, M. of M., 1916–1919. Assistant Chemist, S. N. M. Co., Ltd., Hounslow, Fine Chemical Manufacturers, 1919–1921. Senior Assistant Chemist, London General Omnibus Co., Ltd., 1921— . (*Signed by*) J. T. Hewitt, Clarence Smith, George Senter, Wm. W. Myddleton, S. Sugden.

GERRARD, WILLIAM, 92, Bromfelde Road, Clapham, S.W. 4. British. Teaching. Chemistry Honours Graduate (London). Diploma and Degree Course in Chemistry and Fuels, 1921–1925 (Wigan Mining and Technical College). Teaching Chemistry and Physics at the London College of Pharmacy, Clapham Rd., Clapham. Evening Chemical Research at the Battersea Polytechnic. (*Signed by*) Henry Phillips, F. C. Ray, A. Sciver, J. Kenyon.

GREENWOOD, CHARLES ROY, 21, Stanstead Rd., Forest Hill, S.E. 23. English. Analyst. National Diploma Agriculture, N.D.A. National Diploma Dairying, N.D.D. British Dairy Farmer's Diploma, B.D.F.D. Harper Adam's College Diploma. (*Signed by*) Charles Dorée, J. C. Crocker, F. H. Lowe.

GREGG, SIDNEY JOHN, 20, Acfold Rd., Fulham, S.W. 6. British. Demonstrator in Chemistry. London B.Sc. (1st Class Honours in Chemistry), 1923. A.R.C.Sc. (1st Class in Chemistry), 1923. Research Student in Physical Chemistry, 1923–1925, working under Professor Philip, F.R.S., at the Imperial College. (*Signed by*) H. F. Harwood, James C. Philip, A. B. P. Page.

HALL, RICHARD ISAAC EDWARD, 289, Iffley Rd., Oxford. British. Research Assistant in the Dyson Perrins Lab., Oxford. B.A. (Oxon.), 1923. *J.C.S.*, 1924, **125**, 2266. (*Signed by*) W. H. Perkin, E. Hope, R. D. Haworth, John Rankin, J. Masson Gulland.

HEAD, JOHN VALON, St. George's Lodge, Winchester. English. Chemical Engineer. B.A., Cambridge, Natural Science Tripos, Part I, 1925. (*Signed by*) William T. Burgess, R. Lessing, Harold G. Colman.

HILL, SAMUEL, 53, Lodge Rd., Orrell, Wigan. British. Deputy Gas Examiner for the City of Manchester under the Gas Regulation Act, 1920. Five years' course in Practical Metallurgy, Sheffield University, covering:

Chemistry, Geology, Iron and Steel manufacture, Fuel and Refractories. 1st Class Certificates. Awarded Sheffield Prize in 3rd year met. Experience obtained as a Chemist with Messrs. Staveley Coal and Iron Co., Ltd., part of which obtained under Mr. J. A. Clements, F.I.C., F.C.S., and also Chemist to Messrs. Bispham Hall Colly. Co. Now Assistant to Mr. J. Booth, F.C.S., A.M.I.Chem.E. (*Signed by*) James Booth, Oswald P. Cronshaw, John A. Clements, H. C. Applebee.

HOWELL, The Rev. CLIFFORD WALTER, St. Mary's Hall, Stonyhurst, Lancs. English. Cleric. Past experience as Student: 3 years' undergraduate course at Royal College of Science, followed by 1 year post-graduate research on Colloid Chemistry. (M.Sc.) (*Signed by*) J. N. Sugden, H. D. Murray, James C. Philip.

JARMAN, ARTHUR WILLIAM, 9, Crouch Hill, London, N. 4. English. Assistant Works Chemist. 2nd Class Honours B.Sc. (Chemistry), London, 1924. (*Signed by*) T. J. Drakeley, G. J. Avey, S. A. Hurren.

JOHNSTON, WILLIAM, 16, Warburton Rd., Seaforth, Liverpool. British. Chemist. Studied Chemistry at Heriot-Watt College, Edinburgh. Engaged continuously for last 9 years as works chemist at H.M. Factory, Craigleith, Edinburgh, with the Lothian Chemical Co., Ltd., Edinburgh, and with Klarit Ltd., Litherland, Liverpool. (*Signed by*) Alex. C. Cumming, A. E. Findley, Russell G. Thin.

JONES, HILDA MABEL ENID, 3, Holly Lodge Gardens, Highgate, N. 6. British. Hons. B.Sc. in Chemistry (Lond.), 1925. (*Signed by*) J. F. Spencer, H. Crompton, J. Stewart.

KELLY, FRANCIS CHARLES, c/o Medical Department, Nairobi, Kenya Colony, E. Africa. British. Chemical Officer (Colonial Service). B.Sc., Aberdeen University, March 1923. Two years' research experience Biochemical Department, Rowett Research Institute, Aberdeen. Further experience in Biochemical Laboratories, Cambridge University. Papers published in *Biochemical Journal*. (*Signed by*) W. Thomas, W. Godden, T. Harold Reade.

KOEPFLI, JOSEPH BLAKE, Dyson Perrins Laboratory, Oxford. U.S.A. Research Student. B.A. and M.A. (Chem.), Stanford University, California. Engaged in research under the direction of Professor W. H. Perkin. (*Signed by*) E. Hope, S. G. P. Plant, W. H. Perkin.

MCCRONE, ROBERT OSBORNE ORR, 15, Montgomerie Quadrant, Kelvinside, Glasgow. Scottish. Research Student (Sesquiterpenes). B.Sc. (Glasgow), in Chemistry. Manufacturing experience in Margarine, as Manager. Qualified Engineer Journeyman. Sugar Manufacture (Beet and Cane), R. Tech. Coll., Glasgow. (*Signed by*) G. G. Henderson, J. Monteath Robertson, David T. Gibson.

MCDONALD, JOHN, 19, White St., Lochgelly, Fife. British. School Teacher. M.A., B.Sc., Ph.D., St. Andrew's University. Carnegie Scholar, 1920–22. Carnegie Fellow, 1922–23. B.A. Reports, 1922, Section B. "Constitution of Hexamylose," *J.C.S.*, 1924, **114**, 943 (Irvine, Pringsheim, and Macdonald). (*Signed by*) J. C. Irvine, G. M'Owan, John Read.

MCKEOWN, ANDREW, Muspratt Laboratory, University of Liverpool. British. University Lecturer in Physical Chemistry. Publications: *J. Amer. Chem. Soc.*, 1921, **43**, 1288 (with W. C. M. Lewis); *ibid.*, 1922, **44**, 1203. *Trans. Faraday Soc.*, 1921, **17**, 517; *ibid.*, 1925, **21**, Pt. 3 (with R. O. Griffith). *Phil. Mag.*, 1923, **46**, 321. *J.C.S.*, 1925, **127**, 2086 (with R. O. Griffith). (*Signed by*) R. O. Griffith, W. C. M. Lewis, E. C. C. Baly, I. M. Heilbron.

McLintock, John, 8, Sardinia Terrace, Glasgow, W. 2. Scots. Research Student, Glasgow University. Degree of B.Sc. in Applied Chemistry, Glasgow University (1924), with special distinction in Inorganic, Physical, and Organic Chemistry. At present Ferguson Research Fellow in Chemistry. (*Signed by*) T. S. Patterson, S. Horwood Tucker, G. G. Henderson.

Maitland, Peter, 10, Dryburgh Gardens, Glasgow, N.W. Scots. Demonstrator and Research Student in Glasgow University (in Organic Chemistry). Graduated in Glasgow, 1924. B.Sc. in Applied Chemistry with special distinction in Adv. Inorganic and Physical and Organic Chemistry. Collaborating in research with Dr. S. Horwood Tucker. (*Signed by*) T. S. Patterson, S. Horwood Tucker, G. G. Henderson.

Mansharamani, Gobindram Tarachand, 13, Inglis St., Stoke-on-Trent. Hindoo, British subject. Specialising in "Pottery." Member of Ceramic Society. I.Sc., Bombay, 1917. Analytical work on Cement and Building materials at Std. Chem. Lab., Bombay, 1920. Certificate for "Higher Technical Course in Pottery" at Sir J. J. School of Art, Bombay, 1924. Served there on staff as Chemistry Assistant; carried on there analytical work on refractory clays and research work on fire-clay goods, stoneware bodies, and glazes, using local raw materials, 1921–1924. Factory research on majolica colours and glazes at Messrs. "Minten Hollin Tile Works." Pottery certificates (Prel. and Ord.) and analytical work on clays, frits, stains, fuel, etc., at Central School of Science and Technology, Stoke-on-Trent. (*Signed by*) H. V. Thompson, J. W. Mellor, F. H. Clews, D. S. Pillai.

Middleton, Edmund B., Parlin, New Jersey, U.S.A. American. Research Chemist, The du Pont-Pathé Co. B.A., M.Sc., Ph.D. Formerly National Research Fellow in Chemistry, Harvard University. (*Signed by*) L. W. McCay, Alan W. C. Menzies, Frank F. Renwick.

Mittal, Navin Chandra, B.Sc., The Prince of Wales College, Jammu, India. Indian. Demonstrator in Geology, P.W. College, Jammu. Demonstrator in Geology. B.Sc. (Punjab). Ordinary Member of Mining and Geological Institute of India. Ordinary Member of Geological Mining and Metallurgical Society of India. Author of "Notes on Blowpipe Analysis." (*Signed by*) S. J. Kohli, Kanwal Nain, S. S. Bhatnagar.

Muir, David, Gwernygerwn House, Treforest, Pontypridd. British. Gas Engineer and Manager. For 6 years I studied Chemistry at the High School and Lauder Technical School, Dunfermline, under Robert Somerville, B.Sc., F.R.S.E., specialising in the analysis of coal, tar, and gases. For 2 years I occupied the position of Chemist at Dunfermline Gas Works. During the last 13½ years I have been in daily contact with the chemical side of gas undertakings. During the last 2½ years I have been associated with S. R. Illingworth, D.Sc., F.I.C., A.R.C.S., F.C.S., in the development of a low-temperature carbonisation plant. (*Signed by*) C. D. Birks, J. H. Canning, S. Roy Illingworth.

Nicholl, John Trevor, Denehurst, Adelaide Park, Belfast. British. Pharmaceutical Chemist. (*Signed by*) Theo. Harper, Henry Wren, Chas. J. Still, C. T. Bennett.

Nonhebel, Gordon, The University, Leeds. English. Demonstrator in Chemistry. B.A., Oxford. Publications: Papers on Electrochemistry, *Phil. Mag.*, 1925, **50**, 723, 729. (*Signed by*) R. Whytlaw Gray, B. Topley, W. Lowson.

Peard, William Leopold, 42, Dingwall Rd., Croydon. British. Assistant Chemist in Power-station Laboratory, London. B.Sc. Hons. Chemistry. Research Student, Battersea Polytechnic. Four years' experi-

ence in general analytical and engineering chemistry. (*Signed by*) J. Kenyon, J. L. White, A. Houssa.

PROCTOR, CLAUDIUS PHILIP, The University, Edgbaston, Birmingham. British. Chemistry Lecture Demonstrator for upwards of thirty years. (*Signed by*) W. N. Haworth, Wm. Wardlaw, S. R. Carter, G. T. Morgan.

QUDRAT-I-KHUDA, MUHAMMAD, 6/39, Linden Gardens, Notting Hill Gate, W. 2. Indian (British). Research Student. M.Sc. (Calcutta University). Author of the paper on "The Condensation of Ketones and Aldehydes with Aromatic Hydroxy Compounds." (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, Arnold Stevenson.

RIDLEY, CHARLES NORMAN, 36, Percy Terrace, Sunderland. English. Chief Chemist, Hendon Paper Works & Co., Ltd., Sunderland (since May 1923). B.Sc. (Durham), September 1920. Chief Assistant Chemist, Messrs. C. A. Parsons & Co., Ltd., Heaton Works Newcastle-on-Tyne, from April 1921 to May 1923. (*Signed by*) P. Phillips Bedson, William Thompson, J. A. Smythe.

ROBERTS, ARTHUR HOWARD, Gammons Farm, Gammons Lane, Watford, Herts. British. Research Chemist. Associate of the Royal College of Science. Diploma of the Imperial College. Associate Institute of Chemistry. Also 1 year research under Professor W. A. Bone, F.R.S., on "Gaseous Combustion under High Pressures." (*Signed by*) Frank Brinsley, L. Horton, William A. Bone.

SETH, KUNWAR BISHESHWAR DAYAL, B.Sc., Kotra Biswan District, Sitapore, India. British Indian. Taluqdar (Baron) of Moizuddinpore, Dt. Sitapore. Is greatly interested in Agricultural and Biological Chemistry. Is a member of the Lucknow University Court and the Board of Intermediate and High School Education, U.P., and many other important bodies. His election as a Fellow of the Chemical Society is likely to promote the study of the above sciences in this province. (*Signed by*) B. M. Gupta, E. R. Watson, Madho Prasad.

SOYKA, CHARLES, 65, Castletown Rd., W. 14. Czecho-Slovak. Research Student in Organic Chemistry at the Imperial College. A.R.C.S. Working on "Mobility of Triad Systems." (*Signed by*) G. A. R. Kon, R. F. Hunter, R. W. West, M. A. Whiteley.

SPENCER, LEONARD JAMES, Mineral Department, British Museum (Natural History), South Kensington, S.W. 7. A.R.C.S. (Dub.). M.A., Sc.D. (Camb.). F.G.S., F.R.S. Desires access to an up-to-date library. (*Signed by*) W. P. Wynne, C. S. Gibson, John Greenaway, T. Slater Price.

STEED, WALTER ARTHUR, 72, St. John's Rd., Isleworth, Middx. British. Junior Analytical Chemist, Parke Davis & Co. Student for Hons. Degree, Sir John Cass Tech. Inst. (*Signed by*) P. C. L. Thorne, James W. Cook, Henry J. S. Sand.

STOREY, RALPH CHARLES, 119, Moorside, Armley, Leeds. Research Student in Clothworkers' Laboratory at Leeds University. Hons. B.Sc. (2nd Class) in Colour Chemistry (1923). M.Sc. and A.I.C. (1924). Working under Prof. A. G. Perkin upon "Partially Acetylated Substances of the Anthraquinone Group," to be published in due time in the *J.C.S.* (*Signed by*) A. G. Perkin, H. M. Dawson, R. B. Forster.

WEBB, CHRISTINE ELIZABETH, 12, Blenheim Rd., St. Alban's, Herts. English. Chemistry Mistress, The Grammar School, Colyton, Devon. B.Sc. (Hons. in Chemistry). Associate of the Institute of Chemistry. (*Signed by*) H. Crompton, J. F. Spencer, J. Stewart.

WILSON, VERA KATHERINE, Willow House, Penistone, nr. Sheffield.

British. Teaching and Research. At present engaged doing research work under Dr. Challenger. B.Sc., Manchester. Science Mistress at Mansfield Grammar School for Girls for 3½ years. (*Signed by*) Arthur Lapworth, Frederick Challenger, Wilson Baker, J. E. Myers, D. H. Bangham, John F. Wilkinson.

WOODLEY, JAMES WILLIAM ALLAN, 22, Taunton Rd., Lee, S.E. 12. British. Temporary Assistant Chemist, Government Laboratory. B.Sc. (1st Class Honours in Chemistry). A.I.C. 1 Year Pupil-assistant to A. E. Parkes, F.I.C., public analyst for Stepney. 15 months' organic research work under A. Fairbourne, M.A., M.Sc., King's College, London. 2 Years Government Laboratory. (*Signed by*) A. G. Francis, J. J. Fox, E. H. Nurse.

Certificates have been accepted by the Council under Bye-Law I (2) in favour of the following :—

CRISTALDI, Dr. GIUSEPPE GRASSI, Catania, Via Androne, 35. Italia. Professore di Chimica Generale nella R. Università. Laureato nella R. Università di Roma. Assistente istituto chimico diretto dal Prof. S. Cannizzaro (1888–1895). Dal febbraio 1895 professore di Chimica generale nella R. Università di Catania. Preside facoltà Scienze. Membro ord. Società chimica di Berlino. Cassiere Accademia Givenia di Catania. Ha contribuito al progresso della scienza chimica come investigatore, sopra sutto nel campo della Chimica organica. (*Signed by*) Emanuele Paternò, Wm. J. Pope.

FOSTER, ROBERT HENRY KING, Charleston, W. Va., U.S.A., Box 824. American. Chemical Engineer and Research Chemist. "Use of Methyl Salicylate in Flowmeter," *Ind. Eng. Chem.*, Jan. 1926, p. 82. Thesis for B.Ch.E. degree at Ohio State University on a Precision Thermostat Regulator. Member Sigma Xi and Amer. Chem. Soc. (*Signed by*) Friend E. Clark.

KOLOSSOWSKY, NICOLAS DE, Prospekt Maklina 20, app. 4, Leningrad, Russia. Russian. Professor of Physical Chemistry and Thermodynamik of University of Leningrad. Doctor ès sciences. "Recherches sur le phénomène de partage" (*Bull. Soc. Chim. Belg.*, 1911; *Bull. Soc. Chim. France*, 1911 et 1925). "Recherches thérmochimiques" (*Bull. Academie de Belgique*, 1912–1913). "Théorie cinétique de la chaleur spécifique des solutions" (*Journ. de chimie physique*, t. **22**; *Bull. Soc. chim. de France*, t. **37** (1925); *Bull. Soc. chim. de Belgique*, t. **34**; *Gazzetta chimica Italiana*, (1925), etc. After all approximately 50 papers and articles. Chem. Abstracts (1925), pp. 646, 531, 496, 540, 506, 791, 653, 870, 765, 859. (*Signed by*) N. S. Kurnakow, D. P. Konovalov.

SMITH, HERSCHEL GASTON, Port Arthur, Texas. U.S.A. Chemical Engineer. Superintendent of Research and Refining Technique, Gulf Refining Company. (*Signed by*) J. G. Detwiler.

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HANDBUCH DER PHYSIK. Edited by HANS GEIGER and KARL SCHEEL. Vol. X. Thermische Eigenschaften der Stoffe. Edited by FRITZ HENNING. Berlin 1926. pp. viii + 486. ill. *M.* 35.40 net. (*Recd.* 9/3/26.) From the Publisher : Herr Julius Springer.

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NATIONAL ELECTRIC LAMP ASSOCIATION. Abstract-Bulletin of the Physical Laboratory. Vol. I, etc. Cleveland, Ohio 1913 +. (*Reference.*) From the Director.

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SCHMIDT, JULIUS. A text-book of organic chemistry. English edition. By HAROLD GORDON RULE. London 1926. pp. xxiv + 798. 25*s.* net. (*Recd.* 14/4/26.)

From the Publishers : Messrs. Gurney & Jackson.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. IV. Part iv. Berlin 1926. pp. 817 to 1036 + viii. ill. *M.* 9 net. (*Recd.* 8/4/26.)

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TSCHITSCHIBABIN, ALEXEI EUGENIEVITSCH. Fundamental laws of organic chemistry. Moscow 1925. pp. xvi + 568. ill. [In Russian.] (*Recd.* 15/3/26.) From the Author.

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COLLOID SYMPOSIUM MONOGRAPH. Papers presented at the third National Symposium on Colloid Chemistry. New York 1925. pp. 324. ill. 25*s*. net. (*Recd.* 14/1/26.)

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HICKS, JAS. A. The laboratory book of mineral oil testing. 4th edition. Revised by ARTHUR WALTER COX. London 1925. pp. viii + 128. ill. 5*s*. net. (*Recd.* 18/3/26.)

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LITINSKY, L. Schamotte und Silika: ihre Eigenschaften, Verwendung und Prüfung. Leipzig 1925. pp. viii + 286. ill. *M*. 27 net. (*Recd.* 14/4/26.)

MONJONNIER, TIMOTHY, and TROY, HUGH CHARLES. The technical control of dairy products: a treatise on the testing, analyzing, standardizing and the manufacture of dairy products.

2nd edition. Chicago 1925. pp. xlii + 936. ill. 50*s*. net. (*Recd.* 18/3/26.)

ROBINET, ÉDOUARD. Manuel général des vins. 7th edition. Vol. I. Paris 1926. pp. iv + 412. ill. 18*fr*. net. (*Recd.* 24/3/26.)

ROGERS, ALLEN. [Editor.] Industrial chemistry. 4th edition. 2 vols. [New York] 1925. pp. xx + 511 + xxiv, v, 512 to 1268. ill. 52*s*. 6*d*. net. (*Recd.* 29/3/26.)

SCHUCHT, LUDWIG. Die Fabrikation des Superphosphates. 4th edition. Edited by the Verein deutscher Dünger-Fabrikanten. Braunschweig 1926. pp. viii + 372. ill. *M*. 27.50 net. (*Recd.* 30/3/26.)

SCOTT, WILFRED W. Standard methods of chemical analysis. 4th edition. 2 vols. [New York 1925.] pp. xxxviii + [866] + 56, xxviii, 1001 to [1926] + 56. ill. 63*s*. net. (*Recd.* 9/4/26.)

TOCHER, JAMES FOWLER. Variations in the composition of milk. Edinburgh 1925. pp. iv + 196. ill. 21*s*. net. (*Recd.* 18/3/26.)

TURNER, THOMAS HENRY, and BUDGEN, NORMAN FREDERICK. Metal spraying. The origin, development, and applications of the metal-spray process of metallisation. London 1926. pp. xiv + 176. ill. 15*s*. net. (*Recd.* 18/3/26.)

UBBELOHDE, LEO, GOLDSCHMIDT, FRANZ, and HARTMANN, MARTIN. [Editors.] Handbuch der Chemie und Technologie der Öle und Fette. Vol. IV. Leipzig 1926. pp. xiv + 798. ill. (*Recd.* 15/3/26.)

[UNITED STATES] NATIONAL RESEARCH COUNCIL. *Committee on X-Rays and Radioactivity*. Radioactivity. By ALOIS F. KOVARIK and LOUIS W. MCKEEHAN. (National Research Council Bulletin No. 51.) Washington 1925. pp. 204. 12*s*. net. (*Recd.* 15/1/26.)

UNITED STATES PHARMACOPŒIAL CONVENTION. The pharmacopœia of the United States of America. 10th decennial revision. (U.S.P. X). Official from January 1, 1926. Philadelphia 1925. pp. lxii + 626. (*Reference*.) 20*s*. net.

VANINO, LUDWIG. [Editor.] Handbuch der präparativen Chemie. 3rd edition. Vol. I. Stuttgart 1925. pp. xxiv + 852. ill. *M*. 39.60 net. (*Recd.* 1/2/26.)

WADE, JOHN. Introduction to the study of organic chemistry. New edition. Revised by HENRY STEPHEN. London 1925. pp. xx + 646. ill. 8*s*. 6*d*. net. (*Recd.* 18/3/26.)

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WILEY, HARVEY WASHINGTON. Principles and practice of agricultural analysis. 3rd edition. Vol. I. Easton, Pa. 1926. pp. xiv + 686. ill. 32*s*. 6*d*. (*Recd.* 12/4/26.)

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, May 6th, 1926, at 8 p.m., Professor H. Brereton Baker, C.B.E., D.Sc., F.R.S., President, in the Chair.

Certificates were read for the first time in favour of:

Robert Henry Clayton, B.Sc., 1, Parkfield Road, Didsbury, Manchester.
Robert Percival Cook, B.Sc., c/o Mrs. M. Watson, 10, Alexander Street, Westbourne Grove, W. 2.
Herbert Douglas Lees, 8, Elvaston Road, Hexham.
Thomas Stevens Stevens, B.Sc., D.Phil., Marsden, Croft Street, Renfrew.
George William Hargraves Stokes, 5, Whimple Street, Plymouth.

The President announced that as the Fellows present numbered less than thirty, the ballot for the election of Fellows arranged for May 6th, could not be held (see Bye-Laws, p. 4, par. 1). It was accordingly postponed.

The following papers were read:

"The nature of the alternating effect in carbon chains. Parts IV, V, VI, and VII." By C. K. Ingold, E. Holmes, and E. H. Ingold.

"The mechanism of tautomeric interchange and the effect of structure on mobility and equilibrium. Part I. The three-carbon system." By C. K. Ingold, C. W. Shoppee, and J. F. Thorpe.

"The correlation of additive reactions with tautomeric change. Part V. The structural conditions affecting mobility and equilibrium." By K. E. Cooper, C. K. Ingold, and E. H. Ingold.

Ordinary Scientific Meeting, Thursday, May 20th, 1926, at 8 p.m., Professor H. Brereton Baker, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
James Thomson Bottomley.....	May 15th, 1869.	May 18th, 1925.
Albert Brown Lyons.....	Nov. 18th, 1886.	April 13th, 1926.
Charles Joseph Wilson	June 19th, 1879.	Nov. 12th, 1925.

Certificates were read for the first time in favour of :

James Baddiley, 59, Fog Lane, Didsbury, Manchester.
Alfred Henry Fennall, 147, Ivy Road, Bolton.
Annie Godfree Hamp, B.Sc., 14, Boileau Road, Ealing, W. 5.
Ibrahim Hilmi el-Sâid Mattar, B.Sc.Tech., Zifta, Egypt.
Harold Fenton Taylor, B.Sc., 5, Carwinian Terrace, Liskeard.
Alfred Spencer White, B.Sc., 33, Linwood Road, Bournemouth.

The ballot for the election of Fellows, postponed from the last Ordinary Scientific Meeting, was held, Messrs. W. M. Colles and H. J. T. Ellingham being elected Scrutators. The following were subsequently declared elected as Fellows :

James Allan, M.A., B.Sc.
Arthur Percival Anderson, B.Sc.
Basil William Anderson, B.Sc.
Edward Sidney Armstrong, B.Sc.
Reginald Percy Ayres, B.Sc.
Francis George Barker.
Arnold Belchetz, M.Sc.
Einar Christian Saxtorph Biilmann, Dr.Phil.
Robert Sidney Cahn, M.A., Dr.Phil.
William Denis Coales, B.Sc.
Dr. Giuseppe Grassi Cristaldi.
Nicholas Michael Cullinane, M.Sc., Ph.D., F.I.C.
William John Dann, B.Sc.
George Henry Davis.
James Dundee.
Robert Jones Evans, B.Sc.
John Garwood Everett, A.I.C.
Robert Henry King Foster.
Harvey Satchell Garlick.
William Gerrard, B.Sc.
Charles Roy Greenwood.
Sidney John Gregg, B.Sc., A.R.C.S.
Richard Isaac Edward Hall, B.A.
John Valon Head, B.A.
Samuel Hill.
Clifford Walter Howell, M.Sc.
Arthur William Jarman, B.Sc.
William Johnston.
Hilda Mabel Enid Jones, B.Sc.
Francis Charles Kelly, B.Sc.
Joseph Blake Koepfli, M.A.
Nicolas de Kolossowsky, D.ès.Sc.
Robert Osborne Orr McCrone, B.Sc.
John McDonald, M.A., B.Sc., Ph.D.
Andrew McKeown.
John McLintock, B.Sc.
Peter Maitland, B.Sc.
Gobindram Tarachand Manshara-mani.
Edmund B. Middleton, B.A., M.Sc., Ph.D.
Navin Chandra Mittal, B.Sc.
David Muir.
John Trevor Nicholl.
Gordon Nonhebel, B.A.
William Leopold Peard, B.Sc.
Claudius Philip Proctor.
Muhammad Qudrat-i-Khuda, M.Sc.
Charles Norman Ridley, B.Sc.
Arthur Howard Roberts, A.R.C.S., A.I.C.
Kunwar Bisheshwar Dayal Seth, B.Sc.
Charles Soyka, A.R.C.S.
Herschel Gaston Smith.
Leonard James Spencer, M.A., Sc.D., F.R.S.
Walter Arthur Steed.
Ralph Charles Storey, M.Sc., A.I.C.
Christine Elizabeth Webb, B.Sc.
Vera Katherine Wilson, B.Sc.
James William Allan Woodley, B.Sc., A.I.C.

The following papers were read :

" The temperature effects on mixing liquids." By W. M. MADGIN, H. V. A. BRISCOE, and J. B. PEEL.

" The alcohols of the hydroaromatic and terpene series. Part V. The geometrical and optical isomerism of the methyl*cyclo*hexanols." By G. A. C. GOUGH, H. HUNTER, and J. KENYON.

" Chemistry of the three-carbon system. Part V. The alkylation of unsaturated ketones." By G. A. R. KON.

" Chemistry of the three-carbon system. Part VI. Some systems containing the benzoyl group." By M. D. FARROW and G. A. R. KON.

" Chemistry of the glutaconic acids. Part XX. Tetrahydro-*iso*phthalic acid." By E. H. FARMER and H. L. RICHARDSON.

List of Papers, or Abstracts thereof, received from April 22nd to May 20th, 1926. (This List does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

" Note on some properties of complex salts of lead iodide and alkali halides." By L. J. BURRAGE.

" Note on the solubility of lead iodide in solutions of sodium chloride at 25° C." By L. J. BURRAGE.

" The viscosity of suspensions and of related systems. Parts I, II, and III." By S. R. HIND.

" The isomerism of the oximes. Part XXV. The dissociation constants of some isomeric aldoximes." By O. L. BRADY and R. F. GOLDSTEIN.

" The classification of the sugars." By J. G. MALTBY.

" The action of nitrous acid on *p*-iododimethylaniline." By T. H. READE.

" On the alleged decomposition of aqueous ammonium nitrite solutions by light." By M. HOLMES.

" The action of light on concentrated aqueous solutions of ammonium thiocyanate." By M. HOLMES.

" The adsorption of water vapour on a plane fused quartz surface. The isosteric heats of adsorption of water on silica and on platinum." By S. LENHER.

" A study of solution. The conductivities of sodium and potassium derivatives of β-ketonic compounds in alcoholic solution." By E. WHITE.

" Compounds of tervalent molybdenum. Part IV. Bromides." By W. WARDLAW and A. J. I. HARDING.

" The constitution of sucrose. Part II. Evidence contributed by the oxidation of *d*-arabinose." By G. MCOWAN.

"Studies in optical superposition. Part VII. The bornyl dimethoxysuccinates." By T. S. PATTERSON, J. D. FULTON, and J. M. SEMPLE (Mrs. I. F. MACCULLOCH).

"Orientation effects in the diphenyl series. Part III. The mononitro-4 : 4′-dihalogenodiphenyls and some allied compounds." By R. J. W. LE FÈVRE and E. E. TURNER.

"The structure of lactones from simple sugars : trimethyl γ-arabonolactone and the supposed β-gluconolactone and β-mannonolactone." By W. N. HAWORTH and V. S. NICHOLSON.

"Low temperature oxidation at charcoal surfaces. Part II. The behaviour of charcoal in the presence of promoters." By E. K. RIDEAL and W. M. WRIGHT.

"Isomeric phenylserines." By M. O. FORSTER and K. A. N. RAO.

"Conessine." By D. D. KANGA, P. R. AYYAR, and J. L. SIMONSEN.

"Period of induction in chemical reactions. Part I. Interaction of mercuric chloride and sodium bicarbonate." P. NEOGI and S. NEOGI.

"The catalytic decomposition of nitric oxide at the surface of platinum." By T. E. GREEN and C. N. HINSHELWOOD.

"A differential method for the measurement of the vapour pressure of liquids." By V. G. JOLLY and H. V. A. BRISCOE.

"A new isomerism of halogenhydroxybenzoyltoluic acids." By M. HAYASHI.

"Silver carbonate." By G. H. JEFFERY and A. W. WARRINGTON.

"Preparation of the symmetrical dihalogenophenols." By H. H. HODGSON and J. S. WIGNALL.

"Some new derivatives of guaiacol and veratrole substituted in the 3- and 6-positions." By A. E. OXFORD.

"The catalytic hydrogenation of carone." By S. N. IYER and J. L. SIMONSEN.

"Examination of the volatile oils from *Xanthorrhea Arborea*, *X. Hastilis*, and *X. Reflexa*." By H. H. FINLAYSON.

"A synthesis of pyrylium salts of anthocyanidin type. Part X. Delphinidin chloride 3-methyl ether." By E. S. GATEWOOD and R. ROBINSON.

"A synthesis of pyrylium salts of anthocyanidin type. Part XI. A synthesis of peonidin chloride." By T. J. NOLAN, D. D. PRATT, and R. ROBINSON.

"The reactivity of *meso*-substituted anthracenes. Part III." By J. W. COOK.

"Copper hydride and its crystal structure." By H. MÜLLER and A. J. BRADLEY.

"The temperature of maximum density of alcohol–water mixtures." By J. P. MCHUTCHISON.

" The photolysis of acetaldehyde and of acetone." By E. J. BOWEN and H. G. WATTS.

" The interaction of hydrogen and nitrous oxide on the surface of gold." By W. K. HUTCHISON and C. N. HINSHELWOOD.

" Olefinic terpene ketones from the volatile oil of flowering *Tagetes glandulifera*. Part II." By T. G. H. JONES.

" The catalytic dissociation of carbon monoxide." By J. CLEMINSON and H. V. A. BRISCOE.

" A new method of diagnosing potential optical activity. Part II. The optical activity of chlorobromoacetic acid." By J. READ and A. M. MCMATH.

" The action of thionyl chloride on hydroxyanthraquinones. Part III." By A. GREEN.

" The viscosities and densities of anhydrous methyl alcohol and of solutions of some halides of sodium and potassium in this solvent." By F. K. EWART and H. R. RAIKES.

" Some unconsidered cases of stereoisomerism." By J. K. SENIOR.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, JUNE 17TH, 1926.

N.B.—The names of those who sign from " General Knowledge " are printed in *italics*.

ADAMSON, JAMES HENRY, c/o Wilts United Dairies, Ltd., Bason Bridge, near Highbridge, Somerset. British. Chemist. M.A. Cantab., Ordinary degree in Chemistry. An Assistant to A. Chaston Chapman, Esq., F.R.S., F.I.C., 1920–1924. (*Signed by*) A. Chaston Chapman, R. Robertson, Geo. Stubbs, J. J. Fox.

ANDREWS, JOHN CLARK, c/o University College, Auckland, New Zealand. British. Post-graduate Research Student in Chemistry at Auckland University College. B.Sc. (N.Z. 1925). Thesis on " The Mutarotation of Glucose," presented to University of N.Z., Nov. 1925. (*Signed by*) Fredk. P. Worley, W. Frank Short, John R. Hosking.

BADDILEY, JAMES, 59, Fog Lane, Didsbury, Manchester. British. As an Industrial Chemist in charge of a large research laboratory, I wish to become a member of the Chemical Society in order to keep abreast with developments on the scientific side of the subject. (*Signed by*) Henry E. Armstrong, E. F. Armstrong, E. H. Rodd, R. Robinson.

CLAYTON, ROBERT HENRY, 1, Parkfield Road, Didsbury, Manchester. Chemical Manufacturer. B.Sc. (Hon. Chem.), Manchester University. Managing Director of Manchester Oxide Company. Director of Messrs. Hardman & Holden, Miles Platting. Director of Cortonwood Collieries. Hon. Treasurer of Manchester Lit. and Phil. Soc. (*Signed by*) Harold B. Dixon, Arthur Lapworth, John C. Withers, John Allan, Herbert Levinstein.

COHN, THEODORE, c/o Medway Oil and Storage Co., Ltd., Isle of Grain, Kent. British. Works Chemist. Associate of the Royal College of Science, 1923. Honours Graduate, University of London. B.Sc., 1923. Research Student, Royal College of Science, 1923–1925. At present Chemist to the Medway Oil and Storage Co., Ltd. (*Signed by*) H. B. Baker, James C. Philip, H. L. Riley.

COOK, ROBERT PERCIVAL, c/o 404, Collins St., Melbourne, Australia. British. Student, Faculty of Science. B.Sc. (Melbourne). Graduated, Dec., 1925. Major subject, "Physiology with special reference to Biochemistry." In Commonwealth Serum Laboratories (Melbourne) 2 occasions each of about 2 months, (1) Investigations on Diagnostic and Veterinary Bacteriology, (2) Tuberculin Dept., studied Biochemistry, Tubercle Bacillus. In these two departments dealt more especially with Biochemical side of the subject. (*Signed by*) Robert Robertson, J. J. Fox, Geo. Stubbs.

CRONSHAW, CECIL JOHN TURRELL, Alnwick, Prestwich Park, nr. Manchester. British. Chemist. B.Sc. (Hons.), Chemistry, Victoria University, Manchester. Technical Manager, British Dyestuffs Corporation, Ltd. (*Signed by*) William D. Rogers, Percy Chorley, M. Barrowcliff.

CROXFORD, JOHN WILLIAM, 73, Brighton Road, East Ham, E. 6. English. Works Analytical and Experimental Chemist in Oils and Fats (Edible). Six years as an A.I.C. Student at evening classes at East Ham Technical College. Distinction in Organic Chemistry in Higher National Certificate. Full Technological Certificate, City Guilds, Oils and Fats. (*Signed by*) W. T. Clough, E. G. Churchill, E. D. Griffiths.

DIXON, BERTRAM EASTWOOD, Springfield, Gt. Bookham, Surrey. English. Chemist, Government Chemist's Department. A.C.G.F.C. A.I.C. B.Sc. (Lond.). (*Signed by*) J. J. Fox, T. H. Bowles, J. F. Hirst.

FENNALL, ALFRED HENRY, 147, Ivy Road, Bolton. English. Analyst and Assistant Works Chemist to Messrs. E. Griffiths Hughes, Ltd. Trained by Messrs. Brindle and Turner. I possess three years' experience in the Analysis and Assay of Pharmaceutical Chemicals, etc. (*Signed by*) Harry Brindle, Chas. Turner, Charles Smith.

GRINDLEY, WILLIAM HARRY, 24, Granville Terrace, Stone, Staffs. British. Earthenware Manufacturer. B.A. (Cantab., Honours in Nat. Sc. Tripos, Part II, Chemistry). B.Sc. (London, Honours). (*Signed by*) J. W. Mellor, James A. Audley, H. V. Thompson.

HAMP, ANNIE GODFREE, 14, Boileau Road, Ealing, W. 5. British. Private Secretary to Director of Research, and Secretary, Research Association of British Motor and Allied Manufacturers. B.Sc., Hons. (Lond.). Worked in Chemical Dept., Chelsea Polytechnic, for three years. (*Signed by*) J. C. Crocker, F. H. Lowe, Francis Arnall, Edna C. Smith.

HOBDAY, JOHN WILLIAM, 535, Liverpool Rd., Irlam, Manchester. British. Coke Oven and By-product Chemist. From 1916–1922, Junior Assistant in Coke Oven Laboratory of Partington Steel and Iron Co. 1922–1924, Chief Assistant to Mr. Humpleby, and from 1924–1925, entirely responsible for all laboratory work on this plant. The Coke Ovens are now closed down and I am at present Chemist to the Road's Dept. of the Partington Steel and Iron Co., Irlam. March 5th, 1926, Appointed Chemist-in-charge of the manufacture of Tarmacadam at the North Lonsdale Tarmacadam Co., Ltd., Ulverston. (*Signed by*) J. W. Humpleby, G. F. Russell, J. J. Morgan.

LEES, HERBERT DOUGLAS, 8, Elvaston Road, Hexham. British. Gas Engineer. Employed in the Laboratory of the Sunderland Gas Co. for 2½ years, and for the past 7 years as Technical Assistant at the Hexham

Gas Works, with full control of laboratory, and have recently been appointed Engineer of the Company's undertaking. (*Signed by*) F. C. Garrett, C. R. Gent, Chas. Wood, John Gibson.

LOVETT, TREVOR, 6, Cerdin Avenue, Pontyclun, Glam. Welsh. Science Teacher of the Boys' Intermediate School, Pontypridd, Glam. B.Sc. (Wales), Chemistry, Physics, Subsidiary Mathematics. M.Sc. (Wales), as result of original research. Publication on "Vapour Pressure and Heat of Dilution of Aqueous Solutions" in Transactions of Faraday Society, No. 64, Vol. XXII, Part 1, 1926. (*Signed by*) E. P. Perman, W. J. Jones, A. A. Read.

MARTIN, ERIC CHARLES, 45, Regent Square, W.C. 1. British. Analytical Chemist. Eight years' practical experience. Third year Chemistry Student. Passed Inter. B.Sc. (*Signed by*) E. de Barry Barnett, J. W. Cook, J. L. Wiltshire.

MATTAR, IBRAHIM HILMI EL-SAID, Zifta, Egypt. Egyptian. Chemist, Chemical Department, Cairo, Egypt. Bachelor of Technical Science (Manchester). No contributions to Chemical Science. (*Signed by*) John K. Wood, Arthur M. Morley, F. L. Pyman.

NEWMAN, JOHN FREDERICK, Mount Royal Ave., St. John's, Newfoundland. British. Assistant Government Analyst for the Dominion of Newfoundland. Educated at Bishop Feild College, St. John's, Newfoundland. Employed as Analyst in the Government Laboratory, Newfoundland, since July, 1916. Appointed First Assistant in December, 1924. (*Signed by*) D. James Davies, J. C. Hogg, Donald M. Turner.

OLDHAM, MAURICE CHARLES, 100, Roose Rd., Barrow-in-Furness. British. Analytical Chemist. Chief Assistant Chemist, Messrs. Vickers, Ltd., Barrow. Inter. B.Sc. (Lond.). (*Signed by*) Alex. W. McLaren, R. T. Thomson, Alfred R. Campbell.

PETERS, ARNOLD THORNTON, "Arnside," Wigan Road, Bolton. British. Chemical Teaching and Research. M.Sc. (Manchester). One year's research with Dr. Challenger on derivatives of selenocyanogen. A joint paper with Dr. F. Challenger and Mr. J. Halévy entitled "The introduction of the selenocyano-group into aromatic compounds," has recently been submitted to the Society. (*Signed by*) Arthur Lapworth, Frederick Challenger, Leslie Randal Ridgway, John F. Wilkinson.

RACK, RALPH SKINNER, Keelby, Habrough, Lincs. British. Research Chemist and General Manager, British Isinglass Co., Ltd., Grimsby. Member of the Institute of Chemical Engineers. (*Signed by*) Harry Thompson, Edward Chapman, E. H. Tripp.

RAMAN, GUBBI ANANTHA, Shimoga, Mysore State, India. Indian. Research Chemist, Rajkot State, Rajkot (India). In independent charge of The State Research Laboratory, Rajkot. B.Sc. of Mysore University, 1920; Analytical Assistant to Dr. Sudborough, Indian Institute of Science, Bangalore, 1920–1921. Mysore Government Research Scholar, 1921–1924: (1) Refining of Indian gul by the sulphitation process, a study of the possibility of; (2) Hydrogenperoxide from ammonium sulphate through the persulphate. (*Signed by*) M. O. Forster, H. E. Watson, B. A. Mehta.

RICHARDS, RONALD ASHLEY, 10, Orange Hill Rd., Heaton Park, Manchester. English. Analytical Chemist. Assistant to Dr. E. A. Wagstaffe, M.Sc., F.I.C., of Manchester, in chemical analysis and research. (*Signed by*) Alex. K. Miller, Percy Bean, E. Clark.

SMART, JOHN, 249, Friern Rd., E. Dulwich, S.E. 22. British. Analytical Chemist. Three years Chemist to Peyle and Blaina Works (Ferromanganese Works). Three years Chemist to Cammel Laird & Co. (Ferromanganese

Works). Four years Chemist to Haqu Prospecting Syndicate, India (Manganese and Chrome). One year Chemist to Fauti Manganese Chemist, West Africa (Manganese and Chrome). (*Signed by*) Alex. W. McLaren, R. T. Thomson, Alfred R. Campbell.

STEVENS, THOMAS STEVENS, "Marsden," Croft St., Renfrew. British. B.Sc. (Glas.), D.Phil. (Oxon.). Assistant in Organic Chemistry, Glasgow University, 1921–1923, 1925–1926. Ramsay Memorial Fellow, 1923–1925. J.C.S. 1923, 123, 2940; 1925, 127, 1462. (*Signed by*) S. Horwood Tucker, T. S. Patterson, G. G. Henderson.

STOKES, GEORGE WILLIAM HARGRAVES, 5, Whimple St., Plymouth. British. Managing Director, Messrs. Stokes & Son, Ltd., Manufacturing Chemists. Thirty years' Analytical and Manufacturing experience. (*Signed by*) Wm. Dawson Lloyd, H. N. B. Richardson, R. E. S. Richardson.

TAYLOR, HAROLD FENTON, 5, Carwinian Terrace, Liskeard, Cornwall. British. Teacher (County Secondary School). B.Sc. (Sheffield, 1922). I wish to keep in touch with the various branches of chemical research. (*Signed by*) W. P. Wynne, Thos. B. Smith, Arthur W. Chapman, E. Gertrude Turner, H. Burton.

WAGHRAY, PRITHIR NATH, Shraddha Bhawan, Residency Bazar, Hyderabad, Deccan, India. Indian. M.Sc. of Allahabad University, India, in Organic Chemistry. Research Scholar, College of Technology, Manchester, connected with the Chemistry of Dyeing, and a Research Student in the same branch since April, 1925, for the degree of M.Sc.Tech. (*Signed by*) Fredk. M. Rowe, John K. Wood, J. Massey Preston.

WHITE, ALFRED SPENCER, 33, Linwood Rd., Bournemouth. British. Secondary School Science Master. Chemistry Lecturer to Evening Classes. B.Sc. Wales. (*Signed by*) Hubert Painter, E. J. Williams, E. P. Perman.

ZVEGINTZOV, MICHAEL, Corpus Christi College, Oxford. Russian. Student of Chemistry at Oxford University. Desires to receive the Journal of the Society, to use the Society's Library, and attend its Meetings. (*Signed by*) W. H. Perkin, D. Ll. Hammick, N. V. Sidgwick, H. R. Raikes.

The following certificate has been authorised by the Council for presentation to ballot under Bye-Law I (2):

BRUCHSTEIN, MOSES, Jerusalem, Palestine. Palestinian. Pharmaceutical Chemist. Responsible Manager of the New British Pharmacy. Graduate of the American University of Beirut, Syria, with the degree of Master of Pharmacy (Ph.M.). Member of the "Société Chimique de France." (*Signed by*) Wm. H. Saunders.

At the next Ordinary Scientific Meeting to be held on June 3rd, the following papers will be read:

"The direct determination of the equivalent of silver referred to oxygen." By H. B. BAKER and H. T. RILEY.

"The structure of silver oxide." By H. T. RILEY.

"Some derivatives of naphthaquinoline and naphtha*iso*quinoline." By C. S. GIBSON, K. V. HARIHARAN, K. N. MENON, and J. L. SIMONSEN.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, June 3rd, 1926, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair.

The following were formally admitted Fellows of the Chemical Society: Leonard James Spencer, Walter A. Steed, Wm. Gerrard, C. Soyka, and B. W. Anderson.

Certificates were read for the first time in favour of:

Abram Bevan, B.Sc., A.I.C., A.R.C.S., 88, Cornerswell Road, Penarth.
Neilson Brown, 27, Douglas Avenue, Wembley.
Ian Alexander Simpson, B.Sc., 21, Gambier Terrace, Hope Street, Liverpool.

The following papers were read:

"The direct determination of the equivalent of silver referred to oxygen." By H. BRERETON BAKER and H. T. RILEY.

"The structure of silver oxide." By H. T. RILEY.

"Some derivatives of naphthaquinolines and naphtha*iso*quinolines." By C. S. GIBSON, K. V. HARIHARAN, K. N. MENON, and J. L. SIMONSEN.

Ordinary Scientific Meeting, Thursday, June 17th, 1926, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death on June 6th, of John Alexander Williamson, who was elected a Fellow on April 21st, 1898.

The PRESIDENT announced that:

1. The following Address of Congratulation had been sealed in Council and would be presented to the University of Sheffield on the occasion of the Celebrations of its Coming of Age on June 30th, July 1st and 2nd, and that the President and Treasurer had been nominated to represent the Society.

The Chemical Society
to the
Council of the University of Sheffield.

The President, Council, and Fellows of the Chemical Society offer their most hearty congratulations on the occasion of the Celebration of the Coming of Age of the University of Sheffield.

In conveying its felicitations to the University on this important event, the Council is not unmindful of the fact that whilst the University is celebrating the 21st anniversary of its birth, its parent, The Firth College, was founded close upon fifty years ago, and was incorporated by Royal Charter in 1897 as the University College, Sheffield.

The City of Sheffield is the centre, not only of steel, glass, and other manufacturing industries, but of an extensive coal-mining area. Its University, with its faculties dealing with these vital industrial activities, occupies an unique position in English education in its relation to the basic industries of the Country.

In conveying the sincere wishes of the Society for the continued prosperity of the University, the Council would place on record its high appreciation of the signal services rendered to chemical science by distinguished members of the University, and in particular to the Society itself by one of the more recent occupants of its Presidential Chair.

Signed on behalf of the Chemical Society,

H. Brereton Baker, *President.*
Jocelyn Thorpe, *Treasurer.*
(L.S.)
T. Slater Price, } *Secretaries.*
C. S. Gibson, }
F. G. Donnan, *Foreign Secretary.*

Sealed in Council this Seventeenth Day of June, One Thousand Nine Hundred and Twenty Six.

2. The Society of Chemical Industry will hold its Forty-fifth Annual Meeting and Congress of Chemists in London, July 19th to 23rd, 1926. Copies of the programme and forms of application can be obtained on application to the Assistant Secretary, Chemical Society, Burlington House, Piccadilly, W. 1.

3. The Council had received an intimation from the American Chemical Society that the 50th Anniversary of its foundation will be held in Philadelphia, U.S.A., from September 6th to 11th, 1926. The Society will meet in eighteen divisional gatherings as follows :

Agricultural & Food Chemistry.
Biological Chemistry.
Cellulose Chemistry.
Chemical Education.
Dye Chemistry.
Fertiliser Chemistry.
Gas & Fuel Chemistry.
Industrial & Engineering Chemistry.
Leather & Gelatin Chemistry.
Medicinal Products Chemistry.
Organic Chemistry.
Petroleum Chemistry.
Physical & Inorganic Chemistry.
Rubber Chemistry.
Sugar Chemistry.
Water, Sewage & Sanitation Chemistry.
History of Chemistry.
Paint & Varnish Chemistry.

Many of the Divisions will hold special symposia of papers, and addresses of importance will be given by authorities in their respective fields.

No direct invitations will be sent out, but all non-American Chemists are cordially invited to attend and take part in the meeting on the same basis as members of the American Chemical Society. Fellows of the Chemical Society expecting to attend the meeting should, if possible, communicate in advance with Mr. Charles L. Parsons, Secretary, The American Chemical Society, Mills Building, Washington, D.C., U.S.A.

4. A communication had been received from the Committee of the van 't Hoff Fund for the endowment of research in pure and applied chemistry. The amount from this fund available for distribution during 1927 is about 1200 Dutch florins.

A Committee, consisting of Professor A. F. Holleman (President), Professor F. M. Jaeger, Professor A. Smits, and Prof. J. P. Wibaut (Secretary), has been appointed to award Grants. Applications should be sent before November 1st, 1926, by registered post to: "Het Bestuur der Koninklyke Akademie van Wetenschappen, bestemd voor de Commissie van het 'van 't Hoff-fonds,' Trippenhuis, Kloveniersburgwal, Amsterdam." Every applicant is requested to submit a detailed account of the manner in which he proposes to expend the grant and to state the reasons for which he makes his application. Papers embodying the results of the research may be published in any journal, but acknowledgment must be made of the source of the grant. Copies of papers containing the results of the research must be forwarded to the Committee.

5. The price of the Annual Reports for 1926, Vol. XXIII, will be the same as for Vol. XXII, namely 5*s*. 6*d*. post free to those Fellows who apply before Christmas Day, 1926.

The following were formally admitted Fellows of the Chemical Society: F. P. Walton, E. S. Armstrong, P. H. Robinson, Geo. H. Davis, and Muhammad Qudrat-i-Khuda.

Certificates were read for the first time in favour of:

A. R. Padmanabha Aiyer, B.A., Nagpur, C.P., India.
Vivian Charles Hewlett, 35/42, Charlotte Street, E.C. 2.
Ram Narayan Kayasth, B.Agric., M.Sc., Agricultural College, Nagpur, C.P., India.
Karel Šandera, R.Nat.Dr., Vinohrady-Manesova 85, Prague, Czechoslovakia.
Morris William Stranack, Messrs. Stranack & Williams, Ltd., Durban.
Russell Richard Thomas Young, M.Sc., Jesus College, Cambridge.

Mr. E. W. Lewis and Dr. H. Burton were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows:

James Henry Adamson, M.A.
John Clark Andrews, B.Sc.
James Baddiley.
Moses Bruchstein, Ph.M.
Robert Henry Clayton, B.Sc.
Theodore Cohn, B.Sc., A.R.C.S.
Robert Percival Cook, B.Sc.
Cecil John Turrell Cronshaw, B.Sc.
John William Croxford.
Bertram Eastwood Dixon, B.Sc., A.I.C.
Alfred Henry Fennall.
William Harry Grindley, B.A., B.Sc.
Annie Godfree Hamp, B.Sc.
John William Hobday.
Herbert Douglas Lees.
Trevor Lovett, M.Sc.
Eric Charles Martin.
Ibrahim Hilmi El-Said Mattar, B.Sc. Tech.
John Frederick Newman.
Maurice Charles Oldham.
Arnold Thornton Peters, M.Sc.
Ralph Skinner Rack.
Gubbi Anantha Raman, B.Sc.
Ronald Ashley Richards.
John Smart.
Thomas Stevens Stevens, B.Sc., D.Phil.
George William Hargreaves Stokes.
Harold Fenton Taylor, B.Sc.
Prithir Nath Waghray, M.Sc.
Alfred Spencer White, B.Sc.
Michael Zvegintzov.

The following papers were read :

"The chemistry of polycyclic structures in relation to their homocyclic unsaturated isomerides. Part VII. Tautomerism corresponding with that of nitrosophenol and quinone-oxime in the di*cyclo*pentane series." By A. HASSELL and C. K. INGOLD.

"The nature of the alternating effect in carbon chains. Part VIII. The nitration of some benzylamine derivatives with special reference to the respective rôles of the ions, salts, and bases." By F. R. GOSS, C. K. INGOLD, and I. S. WILSON.

"The structure of the normal monosaccharides. Part V. Fructose." By E. L. HIRST.

"The constitution of the disaccharides. Part XI. The relationships of fructose, γ-fructose, and sucrose." By W. N. HAWORTH and E. L. HIRST.

"The formation of phosphinic acids from triarylmethoxy-phosphorus dichlorides." By D. R. BOYD and F. J. SMITH.

The Council has made the following Grants from the Research Fund :

	£	*s.*	*d.*
Investigation of the action of tyrosinase. E. A. Bevan ...	10	0	0
Mechanism of isomeric change in aromatic compounds. A. W. Chapman	10	0	0
Application of the Guareschi reaction to quinones. R. Craven	5	0	0
Isolation of dvi-manganese from manganese-containing compounds. J. G. F. Druce	5	0	0
Asymmetric synthesis. P. K. Dutt	5	0	0
Studies in the hydroxyanthraquinone series. A. Green ...	5	0	0
Chemistry of conjugated compounds. A. T. Healey	10	0	0
Essential oil extracted from Queensland Sandalwood. T. G. H. Jones	10	0	0

	£	s.	d.
Formation and ring closure of substituted adipic acids. J. Kracovski	8	0	0
Tautomerism in derivatives of alkyl adipic acids. C. D. Langford	12	0	0
Synthesis and properties of $\alpha\alpha'$-diphenyl hexatrienes. B. D. Laroia	8	0	0
The structure of *o*-dinitrotolidines. R. J. W. Le Fèvre ...	5	0	0
(*a*) Influence of an *a*-substituent on the mobility of the $\alpha\beta$–$\beta\gamma$ change. (*b*) Action of zinc alkyl iodides on chlorides of certain α and β hydroxy acids. B. T. Narayanan	7	10	0
Chemistry of the three-carbon tautomeric system. J. H. Nutland	12	0	0
The structure of the apocyanines. H. G. Ordish	10	0	0
Constitution of the glutaconic acids. J. Packer	10	0	0
Configuration of tervalent nitrogen. R. Raper	10	0	0
Influence of groups and associated rings on the stability of certain ring systems. S. S. G. Sircar	10	0	0
The single electrode potential of a metal and non-aqueous solutions of electrolytes. W. E. Soper	10	0	0
Triad systems of the amidine type. C. Soyka	5	0	0
Intra-annular tautomerism. I. Vogel	12	0	0
	£179	10	0

THE LIBRARY.

The Library will be closed for Stocktaking from Monday, August 2nd, until Saturday, August 14th, 1926 (inclusive). During the following four weeks (August 16th to September 11th), the Library will close daily at 5 p.m.

List of Papers, or Abstracts thereof, received from May 20th to June 17th, 1926. (This List does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"The non-acidic oxidation products of paraffin wax." By F. Francis and H. F. Gauntlett.

"The optical resolution of chlorosulphoacetic acid." By J. Read and A. M. McMath.

"The rotatory dispersion of the esters of lactic acid. Part II. The isomeric butyl esters." By C. E. Wood, J. E. Such, and F. Scarf.

"Note on an alternating-current cell." By E. S. Hedges.

"Studies of dynamic isomerism. Part XXII. Methyl alcohol as an amphoteric solvent for the mutarotation of the sugars." By I. J. Faulkner and T. M. Lowry.

"The oxidation of tartaric acid by solutions of silver salts." By D. R. MAXTED.

"Styrylbenzopyrylium salts. Part VII. The conversion of 7-methoxy-2 : 3-dimethylchromone into styrylpyrylium salts." By I. M. HEILBRON and A. ZAKI.

"The condensation of benzyl methyl ketone with salicylaldehyde." By R. DICKINSON.

"Kinetics of the reaction between pyridine and picryl chloride in alcoholic solution." By F. W. HODGES.

"The alkaline hydrolysis of esters in aqueous alcoholic solution. Part I. The interaction of phenoxides and aliphatic esters in alcoholic solution." By E. S. GYNGELL.

"Formation and stability of *spiro*-compounds. Part XIII. *spiro*-Compounds from the substituted lævulic acids." By E. ROTHSTEIN and J. F. THORPE.

"Pseudo-ternary systems containing sulphur. Part I. Sulphur and quinoline, pyridine, and *p*-xylene." By D. L. HAMMICK and W. E. HOLT.

"Constitution of the yellow sodium compounds formed from ethyl citraconate (or itaconate) and ethyl sodiomalonate." By C. K. INGOLD and C. W. SHOPPEE.

"Synthesis of certain higher aliphatic compounds. Part II. The hydration of stearolic acid." By G. M. ROBINSON and R. ROBINSON.

"Some derivatives of homocatechol. Part I." By F. R. GRAESSER-THOMAS, J. M. GULLAND, and R. ROBINSON.

"Some derivatives of homocatechol. Part II." By J. M. GULLAND and R. ROBINSON.

"2 : 3 : 4-Trinitrotoluene." By F. H. GORNALL and R. ROBINSON.

"Some derivatives of 1-benzyltetrahydro*iso*quinoline." By R. ROBINSON and H. WEST.

"Synthetical experiments in the phenanthrene group of the alkaloids. Part I." By R. ROBINSON and J. SHINODA.

"The interaction of sulphur dioxide and hydrogen sulphide." By E. MATTHEWS.

"Phototropic amino-aryl disulphoxides." By R. CHILD and S. SMILES.

"The crystal structure of quinol." By W. A. CASPARI.

"Studies in adsorption by an optical method. Fixation of methylene blue by yeast-phosphor-protein sol within the disperse phase." By R. RIWLIN.

"The condensation of quinaldine with *m*-nitrobenzaldehyde." By T. W. J. TAYLOR and C. P. WOODHOUSE.

"Resin-like inclusion in bituminous coals. Studies in the composition of coal." By R. WIGGINTON.

"Derivatives of tetrahydrocarbazole. Part VI. Compounds derived from 6-methyltetrahydrocarbazole." By B. L. MANJUNATH and S. G. P. PLANT.

"Researches in the menthone series. Part II." By J. READ and G. J. ROBERTSON.

"Acid and salt effects in catalysed reactions. Part I." By H. M. DAWSON and J. S. CARTER.

"A review of the generalisation as to ring structure in the sugar group." By H. D. K. DREW and W. N. HAWORTH.

"Researches on residual affinity and co-ordination. Part XXVII. Ethylenediammine copper salts." By G. T. MORGAN and F. H. BURSTALL.

"Researches on residual affinity and co-ordination. Part XXVIII. Thermal measurements on derivatives of cupric iodide." By G. T. MORGAN, S. R. CARTER, and W. F. HARRISON.

"The density of boron trichloride, and the suspected variation in the atomic weight of boron." By H. V. A. BRISCOE, P. L. ROBINSON, and H. C. SMITH.

"The estimation of ferro- and ferri-cyanides." By W. M. CUMMING and W. GOOD.

"An *X*-ray study of some structural modifications of long-chain compounds." By S. H. PIPER, T. MALKIN, and H. E. AUSTIN.

"The propagation of flame in mixtures of methane and air. Part IV. The effect of restrictions in the path of flame." By W. R. CHAPMAN and R. V. WHEELER.

"The rearrangement of the alkylanilines." By W. J. HICKINBOTTOM.

"Researches on the chemistry of Esthonian shale-oil. Part I. The isolation and properties of phenols." By P. N. KOGERMAN.

"The preparation of 3 : 4-methylenedioxyhomophthalic acid." By R. D. HAWORTH, W. H. PERKIN, and T. S. STEVENS.

"Synthesis of cryptopine and protopine." By R. D. HAWORTH and W. H. PERKIN.

"Researches in the menthone series. Part III." By J. READ, A. M. R. COOK, and (in part) M. I. SHANNON.

"2 : 2′-Bis-benz-1 : 3-dithiolene." By W. R. H. HURTLEY and S. SMILES.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ARRHENIUS, SVANTE AUGUST. Chemistry in modern life. Translated from the Swedish by CLIFFORD SHATTUCK LEONARD. London 1926. pp. xvi + 286. ill. 15*s.* net. (*Recd.* 15/4/26.)
From the Publishers: Messrs. Chapman & Hall.

BRIGGS, DENNIS BROOK. Practical glass manipulation. London 1926. pp. xvi + 39. ill. 2*s.* 6*d.* net. (*Recd.* 10/9/26.)
From the Publishers: Messrs. Crosby, Lockwood & Son.

BROSCHAT, ERNST. Der Behälterbau: ein Handbuch für die Berechnung und Ausführung eiserner Flüssigkeits- und Gasbehälter. Part I. Leipzig 1926. pp. 96. ill. *M.* 7.50. (*Recd.* 15/6/26.)
From the Publisher: Herr Otto Spamer.

CASTAN, PIERRE. La chimie des matières colorantes organiques. Paris 1926. pp. 456 + iv. 30 *fr.* net. (*Recd.* 19/4/26.)
From the Publishers: MM. Gaston Doin & Cie.

HINSHELWOOD, CYRIL NORMAN. Thermodynamics for students of chemistry. London 1926. pp. viii + 186. 6*s.* net. (*Recd.* 9/6/26.) From the Publishers: Messrs. Methuen & Co.

MITCHELL, CHARLES AINSWORTH. Vinegar: its manufacture and examination. 2nd edition. London 1926. pp. xvi + 212. ill. 10*s.* 6*d.* net. (*Recd.* 3/6/26.) From the Author.

PARKER, REGINALD GEORGE. The control of laundry operations: being an introduction to the application of scientific principles to laundry processes. London 1925. pp. xii + 245. ill. (*Recd.* 20/4/26.) From the British Launderers Research Association.

REILLY, JOSEPH, RAE, WILLIAM NORMAN, and WHEELER, THOMAS SHERLOCK. Physico-chemical methods. London 1926. pp. xii + 736. ill. 30*s.* net. (*Recd.* 22/4/26.)
From the Publishers: Messrs. Methuen & Co.

II. *By Purchase.*

ALLIOTT, EUSTACE ALEXANDER. Centrifugal dryers and separators. London 1926. pp. 152. ill. 6*s.* net. (*Recd.* 11/5/26.)

BEACALL, THOMAS [and others]. Dyestuffs and coal tar products. 4th edition. London 1926. pp. xii + 168. ill. 16*s.* net. (*Recd.* 5/5/26.)

BRUHAT, GEORGES. Cours de thermodynamique à l'usage de l'enseignement supérieur scientifique et technique. Paris 1926. pp. viii + 408. ill. 40 *fr.* (*Recd.* 21/5/26.)

CHEMICAL MANUFACTURERS' DIRECTORY of England, Wales, and

Scotland, with some of the firms in Ireland, for 1926, being a list of the principal manufacturers of chemicals used in commerce, medicine, agriculture, and the arts. 58th edition. London 1926. pp. 228. (*Reference.*) 4*s*. 6*d*. net.

Conn, H. J. Biological stains : a handbook on the nature and uses of the dyes employed in the biological laboratory. Geneva [New York] 1925. pp. 152. 12*s*. 6*d*. net. (*Recd.* 7/6/26.)

Cronshaw, Harry Brennan. Modern drying machinery. London 1926. pp. 160. ill. 6*s*. net. (*Recd.* 11/5/26.)

Dralle, Robert. Die Glasfabrikation. 2nd edition. Edited by Gustav Keppeler. Vol. I. München 1926. pp. x + 766. ill. *M*. 64 net. (*Recd.* 19/4/26.)

Dunoyer, Louis. Vacuum practice. Translated by J. H. Smith. London 1926. pp. x + 228. ill. 12*s*. 6*d*. net. (*Recd.* 5/5/26.)

Euler, Hans von. Enzyme und Co-Enzyme als Ziele und Werkzeuge der chemischen Forschung. (Sammlung, Vol. XXVIII.) Stuttgart 1926.

Fischer, Hans. Die physikalische Chemie in der gerichtlichen Medizin und in der Toxikologie mit spezieller Berücksichtigung der Spektrographie und der Fluoreszenzmethoden. Zürich 1925. pp. viii + 260 + xl + 19 plates. *M*. 10. (*Recd.* 19/5/26.)

Foltzer, Joseph. Artificial silk and its manufacture. 3rd edition. Translated by T. Woodhouse. London 1926. pp. xiv + 256. ill. 21*s*. net. (*Recd.* 5/5/26.)

Grossmann, Hermann. Stickstoffindustrie und Weltwirtschaft. (Sammlung, Vol. XXVIII.) Stuttgart 1926.

Haskins, Charles Homer. Studies in the history of mediaeval science. Cambridge, [Mass.] 1924. pp. xiv+ 412. 28*s*. net. (*Recd.* 9/6/26.)

Hewlett, Richard Tanner. A manual of bacteriology, clinical and applied. London 1926. pp. x + 646. ill. 18*s*. net. (*Recd.* 5/5/26.)

Hinshelwood, Cyril Norman. The kinetics of chemical change in gaseous systems. Oxford 1926. pp. 204. ill. 12*s*. 6*d*. net. (*Recd.* 11/5/26.)

Hottenroth, Valentin. Die Kunstseide. Leipzig 1926. pp. xii + 492. ill. *M*. 28. (*Recd.* 26/5/26.)

International Critical Tables of numerical data, physics, chemistry, and technology, Prepared under the auspices of the International Research Council and the National Academy of Sciences by the National Research Council of the United States of America. Vol. I. New York 1926. pp. xx + 416. (*Reference.*)

KREMANN, ROBERT. Elektrolyse geschmolzener Legierungen. (Sammlung, Vol. XXVIII.) Stuttgart 1926.

PROST, EUGENE. Métallurgie des métaux autres que le fer. 2nd edition. Paris 1924. pp. x + 1250. ill. 125 *fr.* (*Recd.* 15/5/26.)

SUCHÁŘÍPA, RUDOLF. Die Pektinstoffe: eine leicht fassliche Darstellung der bisherigen wissenschaftlichen Arbeiten und der sich daraus für den Praktiker ergebenden Winke. Braunschweig 1925. pp. 188. ill. *M.* 6. (*Recd.* 26/5/26.)

TUTTON, ALFRED EDWIN HOWARD. Crystalline form and chemical constitution. London 1926. pp. xii + 252. ill. 10*s.* 6*d.* net. (*Recd.* 22/4/26.)

UNITED STATES. *Department of Commerce.* Bureau of Standards. National directory of commodity specifications. Classified and alphabetical lists and brief descriptions of existing commodity specifications. Washington 1925. pp. vi + 380. (*Reference.*) 7*s.* 6*d.* net.

—— *Department of the Interior.* Bureau of Mines. Report . . . to the AMERICAN PETROLEUM INSTITUTE. Investigation of toxic gases from Mexican and other high-sulphur petroleums and products. By R. R. SAYERS [and others]. Washington 1925. pp. viii + 108. ill. 2*s.* net. (*Recd.* 18/5/26.)

WEBER, LOTHAR E. The chemistry of rubber manufacture. Based on the 5th edition of "The chemistry of india rubber" by CARL OTTO WEBER. London 1926. pp. xii + 372. ill. 21*s.* net. (*Recd.* 5/5/26.)

WELLS, HARRY GIDEON. Chemical pathology. 5th edition. Philadelphia 1925. pp. 790. 40*s.* net. (*Recd.* 5/5/26.)

WENTZEL, FRITZ. Die photographisch-chemische Industrie: die Erzeugung und Verarbeitung photographisch-chemischer Präparate. Dresden 1926. pp. xvi + 363. ill. *M.* 20. (*Recd.* 15/5/26.)

WHITTAKER, C. M. Dyeing with coal-tar dyestuffs. 2nd edition. London 1926. pp. x + 248. 10*s.* 6*d.* net. (*Recd.* 5/5/26.)

WILLIAMS, HAL. Mechanical refrigeration: being a practical introduction to the study of cold storage, ice-making and other purposes to which refrigeration is being applied. New edition. London 1924. pp. x + 502. ill. 20*s.* net. (*Recd.* 11/3/26.)

WILSON, SAMUEL P. Pyroxylin enamels and lacquers: their raw materials, manufacture and application. New York 1925. pp. x + 214. ill. 13*s.* 6*d.* net. (*Recd.* 12/4/26.)

ZSIGMONDY, RICHARD, and THIESSEN, P. A. Das kolloide Gold. (Kolloidforschung in Einzeldarstellungen.) Leipzig 1925. pp. x + 229. ill. *M.* 14 net. (*Recd.* 28/1/26.)

III. *Pamphlets.*

Australian Chemical Institute. 8th Annual Report. 1924–1925. Sydney 1925. pp. 82.

British Engineering Standards Association. British standard specification for cast iron filter plates and frames. London 1925. pp. 37. ill.

British Research Association for the Woollen and Worsted Industries. Annual Report 1925. pp. 27. ill.

British Silk Research Association. Fastness of dyes on silk: proposed standards for fastness to light, water, washing, degumming, perspiration: classification of a number of dyes according to their fastness with reference to these standards. Leeds 1925. pp. 24.

Browne, Charles Albert. The life and chemical services of Fredrick Accum. (From the *J. Chem. Education*, 1925). ill.

Ferrier, R. Les nouveaux axiomes de l'electronique (mécanique des electrons). Paris 1925. pp. 63.

Fersman, Alex. La kemio de l'Universo. Translated by S. Rublev. Leipzig 1925. pp. 79.

Grün, Richard. Ueber Steinholz. Leipzig 1925. pp. 16. ill.

Institute of Chemistry of Great Britain and Ireland. Copyright: with special reference to scientific and technical papers and publications. By Evan James MacGillivray. London 1926. pp. 40.

Lessing, Rudolf. Cantor Lectures on coal ash and clean coal. London 1926. pp. 48. ill.

Menschutkin, Boris N. From the history of chemistry. (Atoms and particles.) Moscow 1926. pp. 75. ill. [In Russian.]

Miller, Lewis B. Some properties of iron compounds and their relation to water clarification. (From the *U.S. Public Health Reports*, 1925, **40**.) ill.

Mines Department. *Safety in Mines Research Board.* Paper No. 15. The limits of inflammability of fire damp and air. By Maurice John Burgess and Richard Vernon Wheeler. London 1925. pp. 21. ill.

—— —— Paper No. 17. The composition of coal: plant cuticles in coal. By Vernon Howes Legg and Richard Vernon Wheeler. London 1926. pp. 10. ill.

—— —— Paper No. 18. The pressure wave sent out by an explosive. Part I. By William Payman and Henry Robinson. London 1926. pp. 60. ill.

—— —— Paper No. 19. The limits of inflammability of firedamp in atmospheres which contain blackdamp. By Hubert Frank Coward and F. J. Hartwell. London 1926. pp. 11. ill.

FRANK COWARD and F. J. HARTWELL. Paper No. 20. The electric ignition of firedamp : alternating and continuous currents compared. By RICHARD VERNON WHEELER. London 1926. pp. 18. ill.

MOIR, JAMES. Colour and chemical constitution. Part XX. Some residual problems. (From the *Trans. Roy. Soc. S. Africa*, 1926, **13**.)

REICHE. El la mondbildo de l'nova fiziko. Translated by H. MURAVKIN. Leipzig [1924.] pp. 52.

RUSKA, JULIUS, and WEIDEMANN, EILHARD. Alchemiste Decknamen. (From the *Sitz. physik.-med. Soz. Erlangen*, 1924, **56**.)

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Food Investigation*. Special Report No. 26. The storage of eggs. By T. MORAN and J. PIQUÉ. London 1926. pp. viii + 80 + 9 plates.

—— *Fuel Research*. Physical and chemical survey of the national coal resources. No. 6. The Lancashire coalfield : the King seam. London 1926. pp. vi + 34. ill.

UNITED STATES. *Department of Agriculture*. Department Bulletin No. 1389. Deterioration of commercially packed chlorinated lime. By C. C. MCDONNELL and LESLIE HART. Washington 1926. pp. 19. ill.

WIEDEMANN, EILHARD. Zur Alchemie bei den Arabern. Erlangen 1922. pp. ii + 32.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, October 21st, 1926, at 8 p.m., Dr. ALEXANDER SCOTT, M.A., F.R.S., Vice-President, in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
John J. Broadbent	Feb. 6th, 1879.	Feb. 27th, 1926.
Allin Cottrell	Dec. 7th, 1922.	Aug. 18th, 1926.
William Gasson	Dec. 6th, 1900.	Sept., 1924.
Alfred F. B. Gomess	June 17th, 1897.	July 22nd, 1926.
Josiah W. Kynaston	Feb. 17th, 1859.	May 9th, 1926.
David J. MacGeorge	Dec. 1st, 1910.	Jan. 14th, 1926.
Lester Reed	Nov. 16th, 1882.	Aug. 5th, 1926.
Claude Smith	Dec. 6th, 1894.	July 7th, 1926.
William Spiller	Jan. 15th, 1863.	Oct. 12th, 1926.
Charles Turner	Dec. 6th, 1888.	Oct. 10th, 1926.

The following announcements were made:

1. That the following letter had been received from the American Chemical Society:

AMERICAN CHEMICAL SOCIETY,
1709 G. STREET N.W.,
WASHINGTON, D.C.,
September 13, 1926.

PROF. FREDERICK G. DONNAN,
CHEMICAL LABORATORY,
UNIVERSITY COLLEGE,
GOWER STREET,
LONDON, ENGLAND.

DEAR PROFESSOR DONNAN,

The beautifully embossed and complimentary address of congratulation from the Officers and Council of the Chemical Society to our Society on the occasion of its Golden Jubilee, received from you by mail with the request that I arrange for its presentation, was duly presented before the General Meeting of the Society on Wednesday, September 8, by Sir James Colquhoun Irvine.

By request of our President, and on behalf of our Council and members, I wish to express our sincere appreciation of the complimentary expressions from your Society and for the good will to ours, both of which, I can assure you, are most heartily reciprocated.

With kind regards,
Sincerely yours,
(*Signed*) CHARLES L. PARSONS.
Secretary.

The following address was sent by the Chemical Society to the President, Council, and Members of the American Chemical Society:

The Chemical Society
to the
President, Council, and Members
of the
American Chemical Society.

We, the President, Council, and Fellows of the Chemical Society, send you our heartiest felicitations and most cordial good wishes on the auspicious occasion of the Jubilee of the American Chemical Society.

The rapid growth of your Society during the last few decades, a growth which has now made it the largest Chemical Society in the world, and the very great and remarkable increase in chemical research in the United States of America, which your Society has done so much to foster and encourage, represent some of the most striking events in the history of our science, and constitute intellectual and material achievements on which we offer you our warmest congratulations.

It was an important moment in the history of Chemistry and in the advance of Science in the New World when on the 6th April, 1876, the group of Chemists called together by your famous fellow-countryman, Professor Charles F. Chandler, and his colleagues, met in the College of Pharmacy in New York City and founded the American Chemical Society. During the last fifty years your Society has steadily increased in numbers, fruitfulness, and influence, and has organised the chemists of your land into a powerful and homogeneous body.

We rejoice with you on this great occasion when you are met together to celebrate the year of your Golden Jubilee. We feel that your hopes and ours are intertwined in a deep and lasting friendship.

It is our sincere wish that the American Chemical Society may continue to grow and prosper, and may contribute in ever-increasing measure to the progress of chemical science and to the well-being of mankind.

Signed on behalf of the Chemical Society,

H. B. Baker, *President.*
Jocelyn Thorpe, *Treasurer.*
T. Slater Price, } *Secretaries.*
C. S. Gibson, }
F. G. Donnan, *Foreign Secretary.*

(L.S.)

Sealed in Council this Twenty-Seventh Day of July, One Thousand Nine Hundred and Twenty Six.

2. That the Annual Chemical Dinner will be held at the Connaught Rooms, Great Queen Street, W.C. 2, on Friday, November 12th, at 7 for 7.30 p.m., Professor F. G. Donnan, F.R.S., in the Chair. Dinner will be followed by a few short speeches, and there will be dancing from 9.15 until midnight. Application for tickets, price 12*s.* 6*d.* each, for lady or gentleman (including gratuities, but not wines), should be made as soon as possible to S. E. Carr, The Chemical Society, Burlington House, W. 1.

3. That the Harrison Memorial Prize Selection Committee will meet shortly to consider the award of the Harrison Prize.

The Prize, of the value of about £150, is to be awarded to the chemist of either sex being a natural born British subject and not at the time over thirty years of age, who, in the opinion of the Selection Committee, during the previous five years has conducted the most meritorious and promising original investigations in any branch of pure or applied chemistry and published the results of those investigations in a scientific periodical or periodicals.

Provided that in the opinion of the Selection Committee there is a candidate of sufficient distinction to warrant an award of the Prize, the award is to be made in December, 1926.

Applications should contain the following information:

(*a*) Name (in full).
(*b*) Age (Birth Certificate to accompany application).
(*c*) Degrees (name of University where obtained).
(*d*) Other qualifications.
(*e*) Experience.
(*f*) Titles of published papers, with Authors' names, including full references to publication.
(*g*) Where research was carried out.
(*h*) Testimonials or references.
(*i*) Any other information bearing on the application.

The Selection Committee is prepared to receive applications, nominations, or information as to candidates eligible for the Prize. Any such communication must be received by the President, The Chemical Society, Burlington House, Piccadilly, London, W. 1, not later than Wednesday, December 1st, 1926.

It was stated that the President had reason to hope that the difficulties which had hitherto existed in awarding the prize have been overcome.

4. That in response to frequent requests the Council has decided to publish portraits, reproduced by a photo-lithographic process, of the following eminent Chemists:

R. W. Bunsen,
Emil Fischer,
A. W. von Hofmann,
D. I. Mendeléeff,
Louis Pasteur,
Sir William Perkin,
Sir William Ramsay,
Sir Henry Roscoe.

The photographs are 8 by 6 inches (approximately) in size, and the mount 15 by 11 inches. The price to Fellows is 18*s.* the set of eight, or 2*s.* 6*d.* each, post free. Applications should be addressed to the Assistant Secretary.

5. That applications for the Annual Reports for 1926 (price 5*s.* 6*d.*) should reach the Assistant Secretary by Christmas Day, 1926.

6. That a meeting of the Research Fund Committee will be held in December next. Applications for Grants, to be made on forms obtainable from the Assistant Secretary, must be received on or before Wednesday, December 1st, 1926. Applications from Fellows will receive prior consideration.

All persons who received Grants in December, 1925, or in December of any previous year, whose accounts have not been closed by the Council, are reminded that Reports must be returned by December 1st.

The attention of Fellows was also drawn to the notice issued on the 15th October, stating that

(*a*) The Abstracts Index for 1926 would cover both Pure and Applied Chemistry and that Fellows who are Members of the Society of Chemical Industry would receive only one copy;

(*b*) Applications for one-sided abstracts for 1927 (price £2 10*s.* post free) should reach the Assistant Secretary by the 31st December, 1926;

(*c*) The publications of the Society of Chemical Industry and of the American Chemical Society for 1927 would be obtainable by Fellows at the following prices:

SOCIETY OF CHEMICAL INDUSTRY.

(*a*) Abstracts in Applied Chemistry (exclusive of Index) ... £2 2*s.* post free
(*b*) Annual Reports of the Progress of Applied Chemistry for 1926 ... ... 10*s.* „

Application should be made direct to the Secretary, Society of Chemical Industry, 46 and 47 Finsbury Square, E.C. 2, and should reach him by Christmas Day, 1926. Fellows resident abroad should apply by return of mail.

AMERICAN CHEMICAL SOCIETY.

(*a*) Journal of the American Chemical Society ... ... $7.25 post free.
(*b*) Chemical Abstracts ... ... $7.25 „
(*c*) Industrial and Engineering Chemistry ... ... $7.25 „
Price for all three Journals: $17·50 post free.
(*d*) Chemical Reviews ... ... $4.50 „

Application should be made direct to the Secretary, American Chemical Society, 1709, G. Street, Washington, D.C., U.S.A., and should be sent as soon as possible.

(*e*) Journal of Physical Chemistry ... ... $8.00 post free. Application should be made to the Journal of Physical Chemistry, Ithaca, N.Y., U.S.A.

NOTE.—*A remittance, made payable to the Society concerned, must accompany each application.*

James M. Bell was formally admitted a Fellow of the Chemical Society.

Certificates were read for the first time in favour of :

Shintaro Araki, 419, Tonodan-Yabunoshitacho, Kyoto, Japan.
Henry Norman Bassett, 51, Ashford Road, Swindon.
Dorothy Baylis, M.Sc., A.I.C., 75, Evington Road, Leicester.
Carlo Frederico Bonini, Via Ospedale 32, Turin.
Albert Brewin, B.Sc., 80, Rosebery Street, Leicester.
Frederick Cecil Bullock, B.Sc., A.I.C., Wingfield, Evington Lane, Leicester.
Stanley Grove Burgess, B.Sc., A.I.C., 283, Putney Bridge Road, Putney, S.W. 15.
Albert Christopher Candler, 7, Platt's Lane, Hampstead, N.W. 3.
Alfred Henry Dickins, 8, Cowbridge, Hertford.
Harry Dunnicliff, B.A., 7, The Terrace, St. Peter's Street, Cambridge.
James Walter Durant, 95, North High Street, Musselburgh.
Mona Elizabeth Eck, 10, Priory Road, Bedford Park, W. 4.
John Trevor Evans, B.Sc., 26, Beechfield Road, Finsbury Park, N. 4.
Doswell Foggan, 55, Park Parade, Whitley Bay.
Harold Goodburn, B.Sc., 5, The Precincts, Canterbury.
Haralal Das Gupta, M.A., T.N.J. College, Bhagalpur, India.
Frank Winston Hall, B.S., The Texas Company, Port Arthur, Texas, U.S.A.
Douglas Vernon Nelmar Hardy, B.Sc., 12, Holyrood Avenue, Highfield, Southampton.
Harold Herbert Hatt, B.Sc., A.I.C., Weybrook Farm, Sherborne St. John, Basingstoke.
Frank Swain Hawkins, B.Sc., Ben Avon, Sandal Road, New Malden.
Edward Alan William Hebdon, B.Sc., 66, Culverden Road, Balham, S.W. 12.
Jack Reginald Irons Hepburn, M.Sc., 119, Richmond Road, N. 1.
Wilfred Eynon Hugh, B.Sc., 4, Upper Frog Street, Tenby, S. Wales.
Arupillai Kandiah, B.Sc., Kondavil East, Vannarponne, Ceylon.
Hermann Kast, Margaretenstrasse 5, Grunewald, Berlin.
Hideo Katagiri, 364, Finchley Road, Hampstead, N.W. 3.
Leon Jean Pierre Amand Georges Keffler, M.Sc., 30, Elmbank Road, Wavertree, Liverpool.
Ernest Laurence Kennaway, M.D., D.Sc., 6, Spring Grove Road, Richmond.
Frederic Nairne Kerr, B.A., 1, Claremont Terrace, Glasgow.
Nurani Sesha Iyer Krishnan, B.Sc., Masina Hospital, Bombay, India.
William Caruth MacTavish, B.Sc., 44, Commerce Street, New York, U.S.A.
Cyril Thomas Mason, M.A., A.I.C., Jallo Resin Factory, Jallo, India.
Herbert Beaumont Matthews, M.Sc., 175, Loose Road, Maidstone.
Norman Philip Millard, Oakdene, Chase Court Gardens, Enfield.
Cecil Walter André Mundy, Lyndhurst, London Road, Ewell.
Frank Paulden, jun., 26, Clyde Road, West Didsbury, Manchester.
Keshaviah Aswath Narain Rao, B.Sc., 3, Radnor Road, Brondesbury, N.W. 6.
Kenneth Charles Roberts, M.Sc., 28, Fellows Road, Hampstead, N.W. 3
Pasquale Romeo, M.D., Ch.D., 104, Charing Cross Road, W.C. 2.

Frederick William Saxton, c/o British Pavements, Ltd., Box 913, G.P.O., Wellington, New Zealand.
James Francis Shillito, B.Sc., Lyndhurst, Scotland Road, Buckhurst Hill.
Harusada Suginome, Chemical Department, The University, Manchester.
Charles Dodgson Walton, 515, Dunbar Drive, Cumberland, Md., U.S.A.
George David Wilkinson, Fishburn, Ferryhill, Durham.
Maung Ba Yan, B.Sc., 8, Crisp Street, Rangoon.

The following certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

Gellert Alleman, B.S., Ph.D., Sc.D., 8, Whittier Place, Swarthmore, Pa., U.S.A.
Ganesh Chandra Moitra, B.Sc., 42, Barr Street, Rangoon.

The following papers were read:

"Examination of an ancient Egyptian (Tut-ankh-Amen) cosmetic." By A. CHASTON CHAPMAN and H. J. PLENDERLEITH.

"The density of boron trichloride, and the suspected variation in the atomic weight of boron." By H. V. A. BRISCOE, P. L. ROBINSON, and H. C. SMITH.

"The formation of protective oxide films on copper and brass by exposure to air at various temperatures." By W. H. J. VERNON.

"The action of antimony trichloride upon some diazotised diamines." By W. H. GRAY.

"The formation and stability of associated alicyclic systems. Part III. The change from '*meta-*' to '*para-*' bridged rings." By E. H. FARMER and J. ROSS.

List of Papers, or abstracts thereof, received from June 17th to October 21st, 1926. (This List does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"A note on the diffusion law as applied to diffusion in solid solution." By J. S. DUNN.

"The hydration of electrolytes and the viscosity of their aqueous solutions." By N. DE KOLOSSOWSKY.

"Hydrolysis of the *d*-glucosides of *d*- and *l*-methyl *n*-hexyl carbinol with emulsin." By S. MITCHELL.

"Anticathodic luminescence of some organic substances." By J. K. MARSH.

"The photochemical decomposition of aqueous oxalic acid solutions." By A. J. ALLMAND and L. REEVE.

"The photochemical decomposition of aqueous formic acid solutions." By A. J. ALLMAND and L. REEVE.

"An unproven multiplicity of elements." By E. F. MORRIS.

"The chemistry of cadinene. Part II. Compounds related to cadinene." G. G. HENDERSON and J. M. ROBERTSON.

"Nitration of phenol." By S. VEIBEL.

"Contribution to the physical chemistry of complex salts. Part I. Transport numbers of copper salicylate." By W. E. HAMER and C. R. BURY.

"The specific heats of hydrocyanic acid. A reply." By E. H. INGOLD.

"Colour and molecular geometry. Part V. A search for a crucial test of colour theories." By J. MOIR.

"Studies in the benzoin series. Part I. Formation and constitution of mixed benzoins." By W. DORAN and P. J. UDALL.

"Interaction between hydrated silica and neutral electrolytes in its relation to the nature of hydrolytic adsorption." By J. N. MUKHERJEE, B. C. GHOSH, K. KRISHNAMURTI, G. N. GHOSH, S. K. MITRA, and B. C. ROY.

"On the diffusion of zinc in the α-series of solid solution in copper." By J. S. DUNN.

"The action of hydrogen fluoride on compounds of selenium and tellurium. Part III. Solid hydrofluorates of tellurium dioxide." By E. B. R. PRIDEAUX, J. O'N. MILLOTT, and J. W. BLOOD.

"The separation of uranium from iron and its determination as fluoride." By J. B. MURGATROYD.

"The supposed molecular asymmetry of pentaerythritolspiranes." By A. FAIRBOURNE, J. W. WOODLEY, and G. E. FOSTER.

"The alkaline hydrolysis of esters in aqueous-alcoholic solutions." Part II. By E. L. SMITH.

"Melting-point curves of optical isomers in the camphor series." By J. D. M. ROSS and I. C. SOMERVILLE.

"A synthesis of some substituted 3-methyl quinolines." By S. G. WILLIMOTT and I. A. SIMPSON.

"Crystalline tetramethyl β-methylfructoside." By W. N. HAWORTH, E. L. HIRST, and A. LEARNER.

"The metallic compounds of certain monoximes and the structure of the oximes." By T. W. J. TAYLOR and E. K. EWBANK.

"The relative stability of the quinoline and indolinone rings." By J. A. AESCHLIMANN.

"Studies in the chemistry of oils and fats. Part I. The preparation of mono- and di-palmitins." By W. BRASH.

"Germanium. Part III. Some salts of germanic acid." By W. PUGH.

"Aminobenzthiazoles. Part V. The unsaturation of heterocyclic rings of the thiazole type and the stability of the bromides of the *l*-alkylaminobenzthiazole series." By R. F. HUNTER.

"Aminobenzthiazoles. Part VI. The addition of bromine to nascent tautomeric systems of the aminothiazole type and the mobility and unsaturation of the 5-bromo-*l*-alkylaminobenzthiazole system." By R. F. HUNTER and C. SOYKA.

"Selective solvent action. Part VI. The effect of temperature on the solubilities of salts in aqueous alcohol." By R. WRIGHT.

"The velocity of saponification of mono- and di-substituted chloro- and methoxy-derivatives of ethyl benzoate." By W. BLAKEY, H. MCCOMBIE, and H. A. SCARBOROUGH.

"The influence of dissolved salts on the mutual miscibility temperature of the systems ethyl alcohol and methyl alcohol with paraffins." By E. J. HOWARD and W. H. PATTERSON.

"The density of calcium carbonate hexahydrate." By J. HUME and B. TOPLEY.

"The dielectric constants of liquid organic mixtures." By R. N. KERR.

"The spectra of the phosphorescent flames of carbon disulphide and ether." By H. J. Emeléus.

"The preparation and hydrolysis of the isomeric azoxybenzyl bromides." By J. B. Shoesmith and W. E. Taylor.

"The systems sodium iodide–acetone and sodium iodide–methyl ethy ketone." By A. E. Wadsworth and H. M. Dawson.

"Elimination of the amino-group of tertiary amino-alcohols. Part IV. The displacement of the amino- by the hydroxy-group." By A. McKenzie and R. Roger.

"The formation of phenylhydrazones. Part I. The mechanism of the reaction." By J. E. Humphries and R. B. Strathdee.

"The influence of substituents on the reactivity of the amino-group in various substituted anilines." By J. E. Humphries and J. Burns.

"The molecular scattering of light in aqueous solutions. Part I." By S. Venkateswaran.

"Miscibility tests of dilute solutions of chromic chloride hexahydrates." By J. E. Howard and W. H. Patterson.

"The passivity of metals. Part I. The isolation of the protective film." By U. R. Evans.

"Aminobenzthiazoles. Part VII. The 2-alkylamino-β-naphthathiazole system." By G. M. Dyson, R. F. Hunter, and C. Soyka.

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"A new scaly variety of aluminium hydroxide." By P. Neogi and A. K. Mitra.

"The ignition of gases. Part VI. Ignition by flames. Mixtures of the paraffins with air." By N. S. Walls and R. V. Wheeler.

"Studies of electrolytic polarisation. Part IV. The electrodeposition potentials of iron, cobalt, and nickel." By S. Glasstone.

"Studies of electrolytic polarisation. Part V. The electrodeposition potentials of alloys of iron, cobalt, and nickel." By S. Glasstone.

"Acid and salt effects in catalysed reactions. Part II. The minimum reaction velocities for acid–salt mixtures." By H. M. Dawson and N. C. Dean.

"The interaction of thiocarbonyl chloride with chloro-substituted anilines and the inhibitory action of *ortho*-substituents." By G. M. Dyson, H. J. George, and R. F. Hunter.

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"Optical activity and the polarity of substituent groups. Part V. *sec.*-β-Octyl esters of some substituted acetic acids and their behaviour towards solvents." By H. G. RULE and R. K. S. MITCHELL.

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AMERICAN MEDICAL ASSOCIATION. Archives of Internal Medicine. Vol. 37, etc. Chicago 1926 +. (*Reference.*)

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ARNALL, FRANCIS, and HODGES, FRANCIS WILLIAM. Theoretical organic chemistry. Part I. London 1926. pp. xii + 372. ill. 10*s.* 6*d.* net. (*Recd.* 22/9/26.)

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EASTMAN KODAK COMPANY. Abridged scientific publications from the Research Laboratories. Vol. IX, 1925. Rochester, N.Y. 1925. pp. 230. ill. (*Reference.*)

From the Eastman Kodak Company.

ELSDON, GEORGE DAVIDSON. The chemistry and examination of edible oils and fats: their substitutes and adulterants. London 1926. pp. xix + 521. ill. 45*s.* net. (*Recd.* 26/7/26.)

From the Publishers: Messrs. Ernest Benn.

EPHRAIM, FRITZ. A text-book of inorganic chemistry. English edition. By PERCY CYRIL LESLEY THORNE. London 1926. pp. xii + 806. ill. 28*s.* net. (*Recd.* 25/6/26.)

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—— Maschinen zum Bedrucken von Textilstoffen Garndruck, Zeugdruck, Tapetendruck. An Hand der deutschen Patentliteratur 1913—1925. Leipzig 1926. pp. xii + 198 + lxvi. ill. *M.* 13.90. (*Recd.* 20/7/26.) From the Publisher: Dr. Max Jänecke.

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THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. V. Part i. Berlin 1926. pp. 288. ill. *M.* 10. (*Recd.* 20/9/26.) From the Publishers: Herren Urban & Schwarzenberg.

TOKYO. *Imperial University.* Journal of the Faculty of Science. Section I. Mathematics, astronomy, physics, chemistry. Vol. I, etc. Tokyo 1925 +. (*Reference.*) From the University.

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UNIVERSIDAD NACIONAL DE LA PLATA. Revista de la Facultad de Ciencias Químicas. Vol. I, etc. La Plata 1923 +. (*Reference.*) From the University.

WOODWARD, WILLIAM EDWARD. The metallography of steel and cast iron. London 1926. pp. xii + 144. ill. 15*s.* net. (*Recd.* 25/6/26.) From the Publishers: Messrs. Crosby Lockwood & Son.

II. *By purchase.*

ALEXANDER, JEROME. [Editor.] Colloid chemistry, theoretical and applied. By selected international contributors. Vol. I. Theory and methods. New York 1926. pp. 974. ill. 60*s.* 6*d.* net. (*Recd.* 14/10/26.)

CHANDLER, CHARLES DE FOREST, and DIEHL, WALTER S. Balloon and airship gases. New York 1926. pp. x + 226. ill. 17*s.* 6*d.* net. (*Recd.* 8/10/26.)

FRIEND, JOHN NEWTON. [Editor.] A text-book of inorganic chemistry. Vol. VII. Part iii. Chromium and its congeners. By REECE HENRY VALLANCE and ARTHUR ALFRED ELDRIDGE. London 1926. pp. xxvi + 380. (*Reference.*) 18*s.* net.

FÜRTH, OTTO. Lehrbuch der physiologischen und pathologischen Chemie: 2nd edition of "Probleme der physiologischen und pathologischen Chemie." Vol. I, i and ii. Leipzig 1925–6. pp. xiv + 416. *Rm.* 30. (*Recd.* 31/8/26.)

HEVESY, GEORGE, and PANETH, FRITZ. A manual of radioactivity. Translated by ROBERT W. LAWSON. Oxford 1926. pp. xx + 252. ill. 15*s.* net. (*Recd.* 14/10/26.)

HIRSCH, F. The transport and handling of mineral acids. London 1926. pp. 140. ill. 6*s.* net. (*Recd.* 8/10/26.)

HUNZIKER, OTTO F. Condensed milk and milk powder. 4th edition. La Grange, Ill. 1926. pp. xvi + 619. ill. 30*s.* net. (*Recd.* 14/10/26.)

LEWIS, WARREN K., and RADASCH, ARTHUR H. Industrial stoichiometry: chemical calculations of manufacturing processes. New York 1926. pp. xii + 174. ill. 12*s.* 6*d.* net. (*Recd.* 14/10/26.)

LIDDELL, DONALD M. [Editor.] Handbook of non-ferrous metallurgy. Prepared by a staff of specialists. 2 vols. New York 1926. pp. xii + 692, vi, 693 to 1440. ill. 60*s.* net. (*Recd.* 14/10/26.)

LISTER, JOHN EDWARD, and HARRIS, C. HARMAN. Mechanical draught. London 1926. pp. 138. ill. 6*s.* net. (*Recd.* 8/10/26.)

MACLEOD, JOHN JAMES RICKARD. Carbohydrate metabolism and insulin. London 1926. pp. xii + 358. ill. 18*s.* net. (*Recd.* 14/10/26.)

MONKHOUSE, ALLAN. Electrical insulating materials . . . with a full description of the methods of testing. London 1926. pp. xvi + 392. ill. 21*s.* net. (*Recd.* 14/10/26.)

MONYPENNY, JOHN HENRY GILL. Stainless iron and steel. London 1926. pp. x + 304. ill. 21*s.* net. (*Recd.* 14/10/26.)

PARRISH, PERCY. Sulphuric acid reaction chambers. London 1925. pp. 160. ill. 6*s.* net. (*Recd.* 8/10/26.)

SCHOTZ, SCHACHNO PEISACH. Synthetic rubber. London 1926. pp. 144. ill. 21*s.* net. (*Recd.* 14/10/26.)

SCHULZE, HANS [and others]. Klassische Arbeiten über kolloide Lösungen. Edited by EMIL HATSCHEK. (Ostwald's *Klassiker*, No. 217.) Leipzig 1926. pp. iv + 172. *M.* 8.80 net. (*Recd.* 15/6/26.)

SMITHELLS, COLIN J. Tungsten: a treatise on its metallurgy, properties and applications. London 1926. pp. viii + 168. ill. 21*s.* net. (*Recd.* 14/10/26.)

SPELLER, FRANK N. Corrosion, causes and prevention: an engineering problem. New York 1926. pp. xiv + 622. ill. 30*s.* net. (*Recd.* 14/10/26.)

THOM, CHARLES, and CHURCH, MARGARET B. The Aspergilli. Baltimore 1926. pp. x + 272. ill. 32*s.* 6*d.* net. (*Recd.* 14/10/26.)

III. *Pamphlets.*

ALSBERG, CARL LUCAS, and GRIFFING, E. P. Effects of fine grinding upon flour. (From *Cereal Chemistry*, 1925, **2**.)

CANNAN, ROBERT KEITH, COHEN, BARNETT, and CLARK, WILLIAM MANSFIELD. Studies on oxidation-reduction. X. Reduction potentials in cell suspensions. (*U.S. Public Health Reports*, 1926, Supplement No. 55.)

CLARK, WILLIAM MANSFIELD, COHEN, BARNETT, and GIBBS, HARRY DRAKE. Studies on oxidation-reduction. VIII. Methylene blue. (From the *U.S. Public Health Reports*, 1925, **40**.)

——— ——— ——— Studies on oxidation-reduction. IX. A potentiometric and spectrophotometric study of meriquinones of the *p*-phenylene diamine and the benzidine series. (*U.S. Public Health Reports*, 1926, Supplement No. 54.)

ELVOVE, ELIAS. A method for the examination of neoarsphenamine and sulfarsphenamine. (From the *U.S. Public Health Reports*, 1925, **40**.)

GIBBS, HARRY DRAKE, COHEN, BARNETT, and CANNAN, ROBERT KEITH. Studies on oxidation-reduction. VIII. A study of dichloro substitution products of phenol indophenol. (From the *U.S. Public Health Reports*, 1925, **40**.)

GRÜN, RICHARD. Thermische Untersuchungen an Hochofenschlacken. Düsseldorf 1925. pp. 39. ill.

MASON, THOMAS G., and WRIGHT, CHARLES HAROLD. A survey of factors affecting the development of the cotton plant in the Oyo and Abeokuta provinces of Southern Nigeria. (From the *Annual Bulletin, Dept. Agric. Nigeria*, 1925, **4**.)

MELS, WILLEM HENDRIK VAN. Werking van gehalogeneerde zuren met sulfieten. Baarn 1926. pp. xiv + 124.

MILLER, LEWIS B. A study of the effects of anions upon the properties of "alum floc." (From the *U.S. Public Health Reports*, 1925, **40**.)

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 21. Flameproof electrical apparatus for use in coal mines. Second report—perforated plate protection. By C. S. W. GRICE and RICHARD VERNON WHEELER. London 1926. pp. 26. ill.

DEC 13 1926

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Meeting held in the Lecture Hall of the Institution of Mechanical Engineers, Storey's Gate, S.W. 1, on Thursday, October 28th, 1926, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair.

Professor S. P. L. Sörensen delivered the Hugo Müller Lecture entitled: "The Composition and the Characterisation of Proteins." A vote of thanks to the Lecturer, proposed by Professor H. E. Armstrong, F.R.S., and seconded by Sir F. Gowland Hopkins, F.R.S., was carried with acclamation, Professor Sörensen making acknowledgment.

Ordinary Scientific Meeting, Thursday, November 4th, 1926, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death on November 1st, of Robert Nicol Lennox, who was elected a Fellow on December 3rd, 1891.

The PRESIDENT announced that:

1. The Council had accepted from Mrs. Alec Tweedie a portrait in oils of Liebig, together with some original letters of Liebig and a copy of a book entitled "George Harley, or the Life of a London Physician," by Mrs. Alec Tweedie.

2. Professor C. S. Gibson, Dr. J. T. Hewitt, Professor G. T. Morgan, and Professor J. F. Thorpe have been appointed by the Council to represent the Society on the Bureau of Chemical Abstracts, and Professors J. W. McBain and J. C. Philip and Dr. T. Slater Price will represent the Society on the Editorial Board of the *Journal of Physical Chemistry*, together with Dr. E. K. Rideal, appointed by the Faraday Society.

Certificates were read for the first time in favour of:

Jogendra Chandra Bardhan, D.Sc., 21, Cromwell Road, S.W. 7.

Harold Llewelyn Bassett, M.A., B.Sc., A.I.C., Bryn Swynol, Cyn Coed Road, Cardiff.

William Audley Bowdler, Brathay Fell, Ambleside.

Charles Buchanan, B.Sc., Ph.D., Thorncroft, Thornside Road, Johnstone, Renfrewshire.

Leslie Hugh Norman Cooper, B.Sc., Eversley, Llandudno Junction.

James Davidson Fulton, Chemistry Department, The University, Manchester.
Alan August Goldberg, B.Sc., Hillview, The Vale, Hampstead, N.W. 3.
George Aleck Crocker Gough, Ph.D., Fayland, Links Road, Ashtead.
Gilbert Frederick Isaacs, B.Sc., Elmcroft, Hendon Lane, Finchley, N. 3.
William Simpson Kentish, B.Sc., A.R.C.S., High Street, Thame, Oxon.
Kakarlamudi Krishnamurti, M.Sc., 142, Elgin Avenue, W. 9.
Manan Kumar Maitra, B.Sc., A.R.C.S., c/o Messrs. Thos. Cook & Son, Berkeley Street, W. 1.
Richard William Morris, A.I.C., 21, Montserrat Road, Putney, S.W. 15.
Arthur Hugh Pearce, B.Sc., The Homestead, St. Mark's, Cheltenham.
Charles Ross Pinnell, B.Sc., 118, Greenwood Road, E. 8.
Herbert William Rudd, B.Sc., Stourbank, Victoria Road, Buckhurst Hill.
Sakarlal Vrijlal Shah, B.Sc., Ph.D., Khadiapole, Baroda, India.
Lewis Michael Simmons, B.Sc., 44, Anson Road, N.W. 2.
John Gordon Stubbs, B.Sc., 31, Hardwicke Road, Palmers Green, N. 13.
Cecil Henry Thorne, Shandon, Carlake, Lanarkshire.
Moung Chit Thoung, B.Sc., A.R.C.S., 53, Eardley Crescent, Earl's Court, S.W. 5.

The following papers were read :

"The structure of the benzene nucleus. Part V. Some *meso*-derivatives of anthracene." By C. K. INGOLD and P. G. MARSHALL.

"The alleged nitration of *S*-methylthioguaiacol. A criticism." By A. POLLARD and R. ROBINSON.

"The isomerism of molybdenyl monochloride." By W. WARDLAW and R. L. WORMELL.

"The inhibitory effect of substituents in chemical reactions. Part I. The reactivity of the nitrogen atom in substituted arylamines." By G. M. DYSON, H. J. GEORGE, and R. F. HUNTER.

Ordinary Scientific Meeting, Thursday, November 18th, 1926, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :—

	Elected.	Died.
George Walter Knox	June 16th, 1864.	Nov. 13th, 1926.
Charles Rumble.....	Feb. 15th, 1883.	Oct. 14th, 1926.
Edwin Roy Watson	Dec. 1st, 1904.	Nov. 10th, 1926.

Certificates were read for the first time in favour of :—

Edmond Johnson Boake, B.A., Widford Lodge, Chelmsford.
Cecil Chilvers, B.Sc., A.I.C., 29, St. Luke's Avenue, Ilford.
Hubert Ivor Hughes, B.Sc., 89, Penchwintan Road, Bangor.
Brynmor Jones, B.Sc., Hilbre, Fronhenlog Terrace, Bangor.
Reginald Patrick Linstead, Ph.D., D.I.C., 46, Compton Road, Winchmore Hill, N.21.

Matthew Morris, Sewage Works, Hoscar, Ormskirk.
Alexander Robertson, M.A., B.Sc., Ph.D., Cloffrickford, Auchnagatt.
Kirpal Singh Gujral Santosh, B.Sc., LL.B., Chhachhi Street, Rawalpindi.
Kenneth Spedding, Mounthill House, Chickenley Lane, Dewsbury.
Ronald Speight, 8, Park View, Thornhill, Dewsbury.
Gilbert O. Ward, A.B., 325, Superior Avenue, Cleveland, Ohio, U.S.A.
Ryo Yamamoto, Chemical Department, The University, Manchester.

The following Certificate has been authorised by the Council for presentation to ballot under Bye-Law I (2) in favour of :—

Cecil Edward Gadwin Harris, 188, Montpelier Road, Durban, S. Africa.

The following papers were read :—

"The unsaturation of heterocyclic ring systems. Part I. The benzthiazole and 1 : 2-dihydrobenzthiazole system." By R. F. HUNTER.

"The unsaturation of heterocyclic ring systems. Part II. The 2-imino-4-ketotetrahydrothiazole system." By R. F. HUNTER and H. MORLAND.

"The chemistry of the three-carbon system. Part X. The mobility of some cyclic ketones." By G. A. R. KON and J. H. NUTLAND.

"The parachor and chemical constitution. Part IV. Three-membered and four-membered rings." By S. SUGDEN and H. WILKINS.

List of Papers, or Abstracts thereof, received from October 21st to November 18th, 1926. (This List does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"Overpotential at antimony cathodes and electrolytic stibine formation." By H. J. S. SAND, J. GRANT, and W. V. LLOYD.

"The crystalline forms of 5-nitrosalicylic acid and of related compounds." By F. D. CHATTAWAY and W. R. C. CURJEL.

"Action of nitric acid on *S*-methylthioguaiacol." By C. K. INGOLD and E. H. INGOLD.

"The constitution of the disaccharides. Part XI. Maltose." By W. N. HAWORTH and S. PEAT.

"Styrylpyrylium salts. Part VIII. 2-Styryl derivatives of β-naphthopyrylium chloride." By R. DICKINSON and I. M. HEILBRON.

"Acid and salt effects in catalysed reactions. Part III. Dependence of the characteristics of the minimum velocity mixture on the concentration of the acid and the application of minimum velocity to the determination of catalytic and ionisation constants." By H. M. DAWSON and C. R. HOSKINS.

"The essential oil of *Agathosma microphylla*." By J. L. B. Smith and K. A. C. Elliott.

"The vapour pressure of water over sulphuric acid–water mixtures at 25° C." By I. R. McHaffie.

"The thermal reactivity of ozone in presence of hydrogen." By J. W. Belton, R. O. Griffith, and A. McKeown.

"Optical activity dependent on co-ordinated beryllium, copper, and zinc." By W. H. Mills and R. A. Gotts.

"Derivatives of acenaphthpyridine. Part I." By S. U. Nair and J. L. Simonsen.

"The unsaponifiable matter from the oils of elasmobranch fish. Part II. The hydrogenation of squalene in the presence of nickel." By I. M. Heilbron, T. P. Hilditch, and E. D. Kamm.

"The unsaponifiable matter from the oils of elasmobranch fish. Part III. Tetra*cyclo*squalene and the production of a new naphthalene hydrocarbon." By J. Harvey, I. M. Heilbron, and E. D. Kamm.

"The sorption of the vapours of benzene and toluene by silicic acid gel impregnated with carbon (carbogel)." By H. A. Fells and J. B. Firth.

"The mercuration of aromatic substances. Part IV. *m*-Nitrotoluene." By S. Coffey.

"The quantitative estimation of mixtures of isomeric unsaturated compounds. Part I. A bromine addition method." By R. P. Linstead.

"The chemistry of the three-carbon system. Part XI. The mechanism of isomeric change in unsaturated acids." By R. P. Linstead.

"Some new organo-tin compounds." By K. K. Law.

"The bromination of quinol monomethyl ether." By F. M. Irvine and J. C. Smith.

"Studies on the Walden inversion. Part XI. Evidence for the bivalency of carbon from some reactions of α-chloroethylbenzene. Di-α-phenylethyl ether." By A. M. Ward.

"The adsorption of benzene vapour on the plane surfaces of glass, fused quartz, and platinum. The isosteric heat of adsorption of benzene on platinum." By S. Lenher.

"The normal oxidation-reduction potential of mercury." By S. R. Carter and R. Robinson.

"Arylselenious acids." By W. H. Porritt.

"Cyclic organo-metallic compounds. Part III. Nitro- and amino-derivatives of phenoxtellurine." By H. D. K. Drew and R. W. Thomason.

"5-Methoxy-α-naphthaldehyde." By J. B. SHOESMITH and H. RUBLI.

"Some substitution products of 2-aminodiphenyl." By H. A. SCARBOROUGH and W. A. WATERS.

"3-Methoxy-2-phenylindole and 3-benzoylamino-2-phenylindole." By R. ROBINSON and S. THORNLEY.

"Dicyanates and dibenzoates of triphenylbismuthine and triphenylstibine." By F. CHALLENGER and V. K. WILSON.

"The mechanism of citric and oxalic acid formation from sugar by *Aspergillus niger*." Part I. By F. CHALLENGER, V. SUBRAMANIAM, and T. K. WALKER.

"Harmine and harmaline. Part IX. A synthesis of harmaline." By R. H. F. MANSKE, W. H. PERKIN, and R. ROBINSON.

"Note on the preparation of standard alkali for buffer solutions." By E. NEWBERY.

"The reactions of trichloroethylene. Part I. Nitration and sulphonation." By R. KING.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, DECEMBER 2nd, 1926.

AIYER, A. R. PADMANABHA, B.A. (Madras), Nagpur, Central Provinces, India. Aryan (Hindu). Assistant Agricultural Chemist at Nagpur, and Extra Assistant Director of Agriculture, Nagpur. As Chief Assistant to the Agricultural Chemist for the past 18 years, I have been connected with all the research work going on in the Section of Agl. Chemist. Besides I have been taking lectures in Agl. Chemistry. (*Signed by*) H. E. Annett, T. K. Buxy, R. H. Beckett.

ARAKI, SHINTARO, No. 419, Tonodan-Yabunoshitacho, Kyoto, Japan. Japanese. Graduate student in electro-analytical chemistry, College of Science, Kyoto Imperial University. Published a paper "On the Equilibria in the Systems Consisting of Ammonium Chromate, Ammonium Sulphate, and Water, and Ammonium Chromate, Potassium Chromate, and Water at 25° C." in Memoirs of the College of Science, Kyoto Imperial University, Vol. VIII, No. 3, 1925. Graduated in 1924 from the Chemical Department of the College of Science, Kyoto Imperial University. At present graduate student in the same College. *J.C.S.*, Abs., 1925, ii, 786. (*Signed by*) Masumi Chikashigé, Rokuro Nakaseko, Shunzo Koidzumi.

BARDHAN, JOGENDRA CHANDRA, 21, Cromwell Road, S.W. 7. Indian. Research Student at the Imperial College of Science. D.Sc., Calcutta University. Formerly Lecturer in Chemistry, Calcutta University. (*Signed by*) M. A. Whiteley, G. A. R. Kon, Arnold Stevenson.

BASSETT, HAROLD LLEWELYN, "Bryn Swynol," Cyn Coed Road, Cardiff. British. Lecturer. M.A. (Cantab.). B.Sc. (London). A.I.C. Lecturer in Organic Chemistry, University College, Cardiff, since 1919. (*Signed by*) N. M. Cullinane, W. J. Jones, A. A. Read.

BASSETT, HENRY NORMAN, 51, Ashford Road, Swindon, Wilts. British. Analytical Chemist in the Chemical Laboratory and Research Section of the Chief Mechanical Engineer's Dept., G.W.R., Swindon. Desirous of keeping in touch with the development of pure chemistry as shown by publication of papers in the Journal, and also of using the Library of the Society from time to time. (*Signed by*) Marcus A. Matthews, E. de Barry Barnett, J. W. Cook.

BAYLIS, DOROTHY, 75, Evington Rd., Leicester. English. Lecturer in Chemistry (Pure and Applied); Analytical and Research Chemist. M.Sc. (Liv.). A.I.C. *Lecturer in Chemistry* (Pure and Applied), Leicester College of Technology since March, 1921. *Analytical Experience*, Aug. 31st, 1914–Feb. 14th, 1916, Analyst to Messrs. Lever Bros., Port Sunlight. Feb. 14th, 1916–Nov. 1st, 1917, Analyst to West Riding of Yorkshire Rivers Board, Wakefield. *Research Experience*, Nov. 1st, 1917–Dec. 31st, 1919, Research Chemist to Messrs. Brookes Chemicals, Ltd., Lightcliffe, near Halifax; Jan. 1st, 1920–Feb. 28th, 1921, Research Chemist to Messrs. British Dyestuffs Corporation, Ltd., Manchester. *Independent Research*, "Studies of Composition of Wool Grease" (Thesis for M.Sc.). (*Signed by*) E. C. C. Baly, I. M. Heilbron, T. P. Hilditch, A. S. Wood.

BEVAN, ABRAM, 88, Cornerswell Road, Penarth. British. Assistant Master, Penarth County School. A.R.C.S. B.Sc. (Wales). Engaged in teaching science. Desirous of keeping in touch with the advance of Chemical knowledge. A.I.C. (*Signed by*) James C. Philip, James N. Sugden, H. B. Baker.

BONINI, CARLO FEDERICO, Turin, via Ospedale, 32. Italian. Librarian of Engineering School (Bibliotecorio della R. Scuola d'Ingegneria), Past Assistant of Metallurgy. Publications: "I pocessi termoelettricis della Liderungia Moderna," 1914. "La Navigazione Interna in Italia," etc. (*Signed by*) L. M. Clark, Guy Barr, P. G. Ward.

BOWDLER, WILLIAM AUDLEY, "Brathay Fell," Ambleside. British. Research Chemist. Eleven and a half years Chemical Manufacturer, partner in Firm of Messrs. Bowdler & Bickerdike, Church (Phenol and allied products). 1902, Trans., 1563, Proc. 197, "Hydroxyoxamides" (in conjunction with Dr. R. H. Pickard, F.R.S.). (*Signed by*) Robert H. Pickard, J. Kenyon, W. E. Bickerdike.

BREWIN, ALBERT, 80, Rosebery St., Leicester. British. Research Student. B.Sc. (1st Hons.) London. Desirous of keeping in touch with chemical research. (*Signed by*) J. R. Partington, F. E. King, E. E. Turner.

BROWN, NEILSON, 27, Douglas Avenue, Wembley. British. Pharmacist. Qualifying Examination of the Pharmaceutical Society of Great Britain Chief Chemist to Messrs. John Barker & Co. (*Signed by*) Duncan P. Woosley, W. W. Jones, Percy J. Thompson.

BUCHANAN, CHARLES, Thorncroft, Thornside Road, Johnstone, Renfrewshire. British. Lecturer in Organic Chemistry. B.Sc. Ph.D. (Glasgow). Assistant in Organic Chemistry, Glasgow University, 1920–26. Patterson and Buchanan, *J.C.S.*, 1924, **125**, 1475 and 2579. (*Signed by*) T. S. Patterson, T. S. Stevens, S. Horwood Tucker.

BULLOCK, FREDERICK CECIL, "Wingfield," Evington Lane, Leicester. British. Analytical Chemist. Five years Works Chemist. One year Assistant to Public Analyst. B.Sc. (London). A.I.C. (*Signed by*) F. Bell, F. C. Kay, S. Greenberg, P. W. B. Harrison.

BURGESS, STANLEY GROVE, 283, Putney Bridge Rd., Putney, S.W. 15. British. Chemical Assistant in the London County Council. B.Sc. (Honours London). A.I.C. (*Signed by*) J. Kenyon, J. H. Coste, F. C. Ray, Harold Hunter, A. Houssa.

CANDLER, ALBERT CHRISTOPHER, 7, Platt's Lane, Hampstead, N.W. 3. British. Senior Scholar, Trinity College, Cambridge. (*Signed by*) Kenneth Fisher, W. H. Mills, Eric K. Rideal.

COOPER, LESLIE HUGH NORMAN, Eversley, Llandudno Junction, North Wales. British. Research Student B.Sc. (Wales) with First Class Honours in Chemistry. Two years Research Work at University College of North Wales, Bangor. (*Signed by*) A. E. Bradfield, F. G. Soper, H. B. Watson.

DICKINS, ALFRED HENRY, 8, Cowbridge, Hertford. British. Student. Have taken A.R.C.S. and B.Sc. courses at Imperial College. I am now doing Research in Organic Chem. at the Imperial College and wish to keep up with recent work. (*Signed by*) M. A. Whiteley, G. A. R. Kon, R. F. Hunter.

DUNNICLIFF, HARRY, 7, The Terrace, St. Peter's Street, Cambridge. British. Research Student. Natural Sciences Tripos, Cambridge, 1st Class Part I, 2nd Class Part II. Research Student in the University Laboratory. (*Signed by*) W. J. Pope, W. H. Mills, W. G. Palmer.

DURANT, JAMES WALKER, 95, North High Street, Musselburgh, Scotland. English. Works Chemist. Student and Lecturer's Assistant, Royal Technical College, Salford, 1915–22. Assistant Foreman Dyer, Arnold Dean & Co., Ltd., Patricroft, 1922–25. Foreman Dyer and Acting Works Chemist, Brinksway Dyeing Co., Ltd., Stockport, 1925–26. Head Works Chemist, Stuart & Jacks, Ltd., Musselburgh, 1926. (*Signed by*) B. Prentice, E. Clark, V. Edge, J. W. McMyn, A. Taylor.

ECK, MONA ELIZABETH, 10, Priory Road, Bedford Park, W. 4. British. Technical Assistant to a firm of Electrical Engineers connected with the Electro-depositing and Sugar Beet Industry. Day Student for four years (1920–24), the full Chemical and Part Physical course at Chelsea Polytechnic. Reasons for desiring admission : (*a*) Use of the Society's Library, (*b*) Facility of attending its Meetings, (*c*) The Society's Monthly Journal, (*d*) Intercourse with the Society's members. (*Signed by*) Francis Arnall, J. C. Crocker, F. H. Lowe.

EVANS, JOHN TREVOR, 26, Beechfield Road, Finsbury Park, London, N. 4. British. Research Student (Chemistry). B.Sc., Hons. Chemistry. (*Signed by*) A. T. Healey, Cecil J. May, J. H. Nutland, I. Vogel.

FOGGAN, DOSWELL, 55, Park Parade, Whitley Bay. British. Head Pharmacist, Royal Victoria Infirmary, Newcastle-on-Tyne. Served fourteen years in the Laboratory under the direct supervision of Mr. S. Dunstan, late Fellow of the Society to which I seek admission. I desire the use of the Library and to obtain the Journal and so keeping in touch with the developments of chemistry. (*Signed by*) Archibald Macpherson, G. F. Merson, Frederick Gilderdale, W. D. Wallace, Prosper H. Marsden.

FULTON, JAMES DAVIDSON, Chemistry Dept., The University, Manchester (for letters), Home address, 63, King's Rd., Beith, Ayrshire. British. Research Student, Chemistry Dept., The University, Manchester. Carnegie Scholar, 1923–24. Assistant, Chemical Dept., Glasgow University, 1924–26. Ramsay Fellow, appointed 1926. 1925, **127**, 2435–44, 1926, 197–99. (*Signed by*) Robert Robinson, Arthur Lapworth, Ernest W. Wignall.

GOLDBERG, ALAN AUGUST, "Hillview," The Vale, Hampstead, N.W. 3. British. Research Student at Imperial College of Science and Technology (Organic Chemistry). B.Sc. London (1st Div. Pass and 1st Class Special Honours Chemistry). (*Signed by*) E. H. Farmer, G. A. R. Kon, M. A. Whiteley.

GOODBURN, HAROLD, 5, The Precincts, Canterbury, Kent. British. Chemistry and Senior Science Master, King's School, Canterbury, since Sept.

1919. B.Sc. (Liverpool), 1913. (*Signed by*) A. G. Loundes, M. Aldridge, Ernest M. Hawkins.

GOUGH, GEORGE ALECK CROCKER, Fayland, Links Rd., Ashtead, Surrey. British. Assistant Research Chemist, National Institute for Medical Research Hampstead, N.W. 3. Ph.D. (Lond.). Research Student, Battersea Polytechnic, 1922–25. *J.C.S.*, 1926, 2052 (with H. Hunter and J. Kenyon). (*Signed by*) Harold Hunter, F. Bell, A. Houssa.

GUPTA, HARALAL DAS, Bhagalpur, India. Hindoo. Professor of Chemistry, T.N.J. College, Bhagalpur. B.A. with Honours in Physics and Chemistry. M.A. in Chemistry (Cal. Univ.). Senior Professor of Chemistry for over fourteen years. Additional member of Faculty of Science, Patna University. Member of Indian Chemical Society. (*Signed by*) J. N. Mukherjee, R. C. Ray, K. S. Caldwell, C. B. Roy.

HALL, FRANK WINSTON, Port Arthur, Texas. Chief Chemist. B.Sc. in Chemistry, Mass. Inst. of Technology, 1915. Research Associate Mass. Inst. of Technology, 1915–16. Chief Chemist of The Texas Company, Port Arthur, Texas. (*Signed by*) James G. Detwiler, K. G. Mackenzie, Thos. R. Duggan.

HARDY, DOUGLAS VERNON NELMAR, 12, Holyrood Avenue, Highfield, Southampton. British. Senior Demonstrator in Chemistry at the University College, Southampton. Obtained First Class Honours in Chemistry in the B.Sc. degree of London University, June 1924. Research Student from June 1924–Oct. 1925. Demonstrator in Chemistry, Oct. 1925–Oct. 1926 *et seq.* (*Signed by*) D. R. Boyd, B. Flürscheim, A. E. Clarence Smith.

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HEPBURN, JACK REGINALD IRONS, 119, Richmond Road, London, N. 1. British. Teacher of Chemistry. M.Sc. (Lond.). *J.C.S.*, 1925, **127**, 1007–1013, "The Mechanism of the Formation of Malachite from Basic Cupric Carbonate." (*Signed by*) S. Sugden, T. J. Drakeley, J. R. Partington.

HEWLETT, VIVIAN CHARLES, 35/42, Charlotte St., E.C. 2. British. Wholesale and Export Druggist. Pharmaceutical Chemist. Chairman, C. J. Hewlett & Sons, Ltd. Work on distillation of alcohol. *Pharm Journal*, [4], 21, 902. (*Signed by*) J. N. Collie, E. J. Millard, W. Phillip Want.

HUGH, WILFRED EYNON, 4, Upper Frog Street, Tenby, South Wales. British. Research Student, Department of Organic Chemistry, Royal College of Science, South Kensington, London, S.W. 7. B.Sc. (Wales), First Class Honours in Chemistry, 1925. 1925–26, Student Demonstrator in Chemistry at University College, Swansea. Research in Physical Chem. under Professor J. E. Coates, D.Sc. With J. A. V. Butler and D. H. Hey, "The Effect of Electrode Materials on Oxidation Potentials," Abs. A., 1926, p. 129. *Signed by*) Jocelyn Thorpe, G. A. R. Kon, E. H. Farmer.

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College Oct. 1923. 1st Class Honours in Chemistry, July 1926. (*Signed by*) J. R. Partington, W. H. Patterson, E. E. Turner, R. J. W. Le Fèvre.

KANDIAH, ARUPILLAI, Kondavil East, Vannarponne, Ceylon. Ceylonese. Organic Research, Royal College of Science, Imperial College of Science and Technology, South Kensington. B.Sc. London. Demonstrator in Chemistry, University College, Ceylon, 1922–24. (*Signed by*) James C. Philip, M. A. Whiteley, R. W. West.

KAST, Dr. HERMANN, Berlin, Grunewald, Margaretenstr. 5. German. Professor of Chemistry in the Chem. Tech. Reichsanstalt. Large number of papers on the phenomena of the decomposition of explosives in the *Zeit. f.d.g. Schiess- und Sprengstoffwesen* and other Journals; also book entitled "Spreng- und Zundstoff." (*Signed by*) Robert Robertson, J. J. Fox, Wm. Macnab.

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KEFFLER, LEON JEAN PIERRE AMAND GEORGES, 30, Elmbank Road, Wavertree. Belgian. University Lecturer in Liverpool. Master of Science (Liverpool). Trans. 1921, **119**, 1476, "Some Derivatives of Anthraquinone-di-imide." (*Signed by*) F. C. Guthrie, R. O. Griffith, W. C. M. Lewis.

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KERR, FREDERIC NAIRNE, 1, Claremont Terrace, Glasgow. British. Research Student in the Department of Organic Chemistry, Cambridge University. Natural Sciences Tripos, Part I, Cl. 2 (1925); Part II, Cl. 1 (Chem.) (1926). (*Signed by*) T. Martin Lowry, W. J. Pope, W. H. Mills, Eric K. Rideal.

KRISHNAMURTI, KAKARLAMUDI, Madras (India), at present residing at 142, Elgin Avenue, London, W. 9. Indian. Research Student under Prof. Donnan, F.R.S. I obtained the First Class M.Sc. degree of the Calcutta University, and afterwards worked as a Research Scholar under Prof. C. V. Raman, F.R.S. (*Signed by*) F. G. Donnan, W. E. Garner, Sam Lenher.

KRISHNAN, NURANI SESHA IYER, Bombay, India. Chemical Analyser, Masina Hospital, Bombay. B.Sc. of Mysore University with Chemistry as the main subject, 1921. Was doing postgraduate work for a short time in the Biochemistry Department of the Indian Institute of Science, Bangalore, and was awarded a Mysore Govt. Research Scholarship, which, however, could not be utilised. Obtained the present post in 1921, and has been doing

a considerable amount of miscellaneous analytical work, chiefly on "Foods and Drugs." Desires to get the Society's publications. (*Signed by*) Gilbert J. Fowler, G. A. Raman, B. A. Mehta.

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MAITRA, MANAN KUMAR, c/o Messrs. Thos. Cook & Sons, Ltd., Berkeley Street, London, W. 1. Indian. Student. Got the B.Sc. of the London University, and the Associateship of the Royal College of Science in 1926. Carrying on research work in Physical Chemistry at the Imperial College of Science and Technology. (*Signed by*) James C. Philip, H. J. T. Ellingham, J. N. Rakshit.

MASON, CYRIL THOMAS, Jallo Resin Factory, Jallo, N.W.R., India. British. Works Manager, Jallo Resin Factory, Jallo. M.A. (Cantab.). A.I.C. Desires to receive the publications of the Society. (*Signed by*) W. H. Mills, Charles T. Heycock, F. G. Mann.

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MILLARD, NORMAN PHILIP, Oakdene, Chase Court Gardens, Enfield, Middlesex. British. Analyst. Inter B.Sc. (Lond.). Student, 1912–14, at University College, London. Ten years in the Analytical Laboratories of C. J. Hewlett & Sons, Ltd. Author of note on "The B.P. Assay of Aconite and its Preparations" (*Pharm. J.*, 1918, [4], 45, 291). (*Signed by*) F. G. Donnan, F. W. Gamble, E. J. Millard.

MORRIS, RICHARD WILLIAM, 21, Montserrat Road, Putney, S.W. 15. British. Student (Research). A.C.G.F.C. A.I.C. One year of research work under Prof. A. J. Hale on acenaphthene derivatives and now working under Dr. R. F. Hunter on the unsaturation of heterocyclic rings of the benzthiazol type at the Imperial College of Science. (*Signed by*) M. A. Whiteley, R. F. Hunter, G. A. R. Kon, R. W. West.

MUNDY, CECIL WALTER ANDRÉ, "Lyndhurst," London Rd., Ewell, Surrey. British. Works Chemist. Articled for three years to Leo Taylor, F.I.C. Junior and subsequently Chief Assistant Chemist to Messrs. W. B. Dick, Oil Refiners. At present Chief Chemist to Messrs. Younghusband & Barnes, Linseed Oil Refiners, Rotherhithe. (*Signed by*) P. C. Rundell, John C. Jennings, B. Adams.

PAULDEN, FRANK, jun., 26, Clyde Road, West Didsbury, Manchester. British. On the Technical Staff of the North British and Mercantile Insurance Company, Ltd. Associate of the Manchester College of Technology, holding the Victoria University Certificate in Technology (Applied Chemistry). (*Signed by*) Frank Lee Pyman, John K. Wood, Percy Bean.

PEARCE, ARTHUR HUGH, "The Homestead," St. Mark's, Cheltenham. British. Chemist. B.Sc. (Lond.) with 2nd Class Honours in Chemistry. Internal Student of London University at Chelsea Polytechnic. *Formerly*

Chemical Apprentice, Analytical Dept., Port Sunlight, and Assistant Chemist, Analytical Dept., in the works of the United Chemists' Association, Ltd., Cheltenham. *Present occupation*, Assistant Chemist, Messrs. Naylor Bros., Research Labs., Slough. (*Signed by*) Charles Dorée, F. H. Lowe, J. C. Crocker.

PINNELL, CHARLES ROSS, 118, Greenwood Rd., London, E. 8. British. Student. B.Sc. (Hons. Chem.). (*Signed by*) E. E. Turner, J. R. Partington, H. A. Mayes.

RAO, KESHAVIAH ASWATH NARAIN, 3, Radnor Road, Brondesbury, N.W. 6. Indian. Research Scholar. B.Sc. (Chemistry), Mysore University. Associate of the Indian Institute of Science. Now carrying on research at The Imperial College of Science. "Isomeric Phenylserines," *J.C.S.*, 1926, p. 1943. "Unstable Modification of *iso*Nitroso Camphor," sent for publication. (*Signed by*) E. H. Farmer, Arnold Stevenson, M. A. Whiteley, G. A. R. Kon, James C. Philip.

ROBERTS, KENNETH CHARLES, 28, Fellows Road, Hampstead, N.W. 3. British. Research Student. Master of Science Degree and Post-Graduate Scholarship in Science of the University of New Zealand. Papers published in other Journals than the *J.C.S.*: *J. Amer. Chem. Soc.*, 1926, **48**, 1975. *J. Soc. Chem. Ind.*, **43**, 39, 295–297T. *J.C.S.*, 1925, **127**, 2451. (*Signed by*) Samuel Smiles, F. H. McDowall, Reginald Child.

ROMEO, PASQUALE, 104, Charing Cross Rd., W.C. 2. American (previously Italian). Physician and Surgeon. Registered as above by the General Medical Council of the United Kingdom. M.D. (Tex.). M.D. Hon. (Valp. Univ.). M.D., Ch.D., D.P.H. (Univ. Rome). Formerly Health Officer, Cellere, Rome. Formerly Lecturer in Physiologic Chemistry, Kansas City Univ. College of Med. and Surg., U.S. "Sulla lipasi nei tessuti umani e durante le malattie," XXX, Malpigli, Rome, 1909. "Il comportamento del ferro nel metabolismo degl' anemici," Natelli, Breen, Rome, 1910. (*Signed by*) Francis E. Corringham, Frank Radcliffe, T. H. Hamnett.

RUDD, HERBERT WILLIAM, "Stourbank," Victoria Rd., Buckhurst Hill. English. Research Student, East London College. Awarded 2nd Class Hons. in Chemistry, June 1926. (*Signed by*) J. R. Partington, E. E. Turner, E. Roberts.

ŠANDERA, KAREL, R.Nat.Dr., Ing. Chem., Prague, Vinohrady, Manesova 85, Czechoslovakia. Czechoslovak. Chief Research Fellow of the Physico-Chemical Department of the Scientific Institute of Czechoslovak Sugar Industry. Former Assistant of Theoretical Physics, Charles' University. Doctor of Natural Sciences (Charles' University, Prague). Engineering Diploma (Technical High School, Chem. Technol. Dept., Prague). Papers: *Abstracts of Chemical Papers*, 1925, **128**, ii, 659 and 717. (*Signed by*) B. Brauner, J. Heyrovský, D. Jaroslav Dědek.

SAXTON, FREDERICK WILLIAM, 178, Willis St., Wellington, New Zealand. British (born Nottingham, England). Chief Chemist, British Pavements, Ltd., Box 913, G.P.O., Wellington. City Corporation Analyst, Wellington, two years. Advanced student for B.Sc., Victoria University College, Wellington (two sections B.Sc. passed). (*Signed by*) W. Frank Short, A. H. Bowell, J. C. Andrews.

SHAH, SAKARLAL VRIJLAL, Baroda, Khadiapole. Indian. Intend to start private practice. B.Sc. of the Bombay University, 1922. Ph.D. of the Goettingen University in Germany, 1925. My publications in the "Hoppe Seylers Zeitschrift für physiologische Chemie," No. 1, 2, 3 of 1926, p. 86, and No. 1, 2, 3, 4, of 1925, p. 205, and my dissertation. (*Signed by*) K. G. Naik, J. N. Mukherjee, J. C. Ghosh.

SHILLITO, JAMES FRANCIS, Lyndhurst, Scotland Rd., Buckhurst Hill, Essex. British. Research Student, East London College. B.Sc. (Hons. Chemistry). (*Signed by*) E. E. Turner, F. E. King, J. R. Partington.

SIMMONS, LEWIS MICHAEL, 44, Anson Road, N.W. 2. British. Student (Battersea Polytechnic). B.Sc. Hons. (Second Class, Special 1926 External). I desire to become a Fellow in order to receive the Publications of the Society and to use the Library. (*Signed by*) J. Kenyon, S. Greenberg, Harold Hunter.

SIMPSON, IAN ALEXANDER, 21, Gambier Terrace, Hope St., Liverpool. British. Research Student, University of Liverpool. B.Sc., Liverpool University, with 1st Class Honours, 1925, in Organic Chemistry. Campbell Brown Fellowship, 1925. (*Signed by*) I. M. Heilbron, William Doran, W. C. M. Lewis, E. C. C. Baly.

STRANACK, MORRIS WILLIAM, Durban, Natal (permanent London address, 58, Clarence Gate Gardens, London, N.W. 1). British. Member Pharmaceutical Society of Great Britain. Examiner, Member, and Secretary Government Pharmacy Board, Natal, South Africa, 1914–26. Controller of Stranack & Williams, Ltd., Durban, Natal, Manufacturing Chemists, 1913–26. (*Signed by*) F. W. Gamble, E. J. Millard, W. Phillip Want.

STUBBS, JOHN GORDON, 31, Hardwicke Road, Palmers Green, N. 13. English. Research Student (East London College). B.Sc. (Hons. Chemistry). (*Signed by*) J. R. Partington, E. E. Turner, F. E. King.

SUGINOME, HARUSADA, Chemical Department, University of Manchester. Japanese. Assistant Professor of Chemistry, Tohoku Imperial University, Sendai, Japan. Graduate of the Tohoku Imperial University, Sendai, Japan. Assistant Professor of Chemistry of the same University. Have done research work under Prof. R. Majima, M.I.A., for eight years. Joint author of following papers: "Ueber die Verschiedenen Isomeren des Japaconitins (I. Mitteilung über Aconitum-Alkaloide)," *Ber.*, 1924, **57**, 1456. "Zur kenntnis des Aconitins und Pyraconitins (II. Mitteilung über Aconitum-Alkaloide)," *Ber*, 1924, **57**, 1467. "Ueber Oxonitin und einige neue Derivate desselben (IV. Mitteilung über Aconitum-Alkaloide)," *Ber.*, 1925, **58**, 2047. At present working under Prof. R. Robinson, F.R.S., at Manchester University. (*Signed by*) Robert Robinson, Arthur Lapworth, Ernest W. Wignall.

THORNE, CECIL HENRY, "Shandon," Carlake, Lanarkshire. English. Analytical Chemist. Chief Chemist of the Cement Works of the Coltness Iron Co., Ltd., Newmains, Lanarkshire, for the past 15 years. Served recently on the British Standards Committee for the issue of The Portland Blast Furnace Cement Specification. (*Signed by*) F. W. Harbord, R. H. Harry Stanger, S. Dickson.

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WALTON, CHARLES DODGSON, 515, Dunbar Drive, Cumberland, Md., U.S.A. British. Industrial Chemist. Fifteen years' experience Chemical Works practice. Three years' manufacture Viscose Artificial Silk. Six years' manufacture Acetate Artificial Silk. Control of Laboratory, Plant Superintendent. (*Signed by*) George Tate, George S. Irving, Charles A. Kelly.

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& Partners up to appointment to present position in May, 1923, under same firm, trading as Henry Stobart & Co., Ltd. Full Member of The Coke Oven Managers Association. Holder of City and Guilds of London Institute Final Certificate in Coke and Bye Products manufacture. Holder of Durham County Council Certificates for 1st, 2nd, 3rd, and 4th year Organic and Inorganic Chemistry. (*Signed by*) John W. Lee, Thos. Biddulph Smith, Philip B. Nicholson.

YAN, MAUNG BA, 8, Crisp Street, Rangoon, Burma. Burmese. Refining and Engineering Chemist. B.Sc. (B'ham.), Oil Engineering and Refining. Departing for Burma to take up a post in an Oil Refinery. (*Signed by*) C. E. Wood, F. W. Pinkard, Wm. Wardlaw, E. A. Cooper, L. W. Needham.

YOUNG, RUSSELL RICHARD THOMAS, Jesus College, Cambridge University. British. Research Student. M.Sc. (New Zealand). Four years' Chemistry, Victoria University College, N.Z. Author of "The Estimation of Nicotine in Tobacco," *N.Z. Journal Science and Technology*, 1926, No. 3, 8, 129–142. (*Signed by*) W. J. Pope, W. H. Mills, W. J. V. Ward, E. H. St. C. Flack.

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WAESER, BRUNO. The atmospheric nitrogen industry, with special consideration of the production of ammonia and nitric acid. Translated by ERNEST FYLEMAN. 2 vols. London 1926. pp. xxvi + 746. ill. 42*s.* net. (*Recd.* 19/10/26.)

III. *Pamphlets.*

HENDRICK, JAMES. Some points about soil fertility : illustrated from Craibstone experiments. (From the *Trans. Highland & Agric. Soc. of Scotland*, 1926.)

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 22. A method for the determination of the velocity of detonation over short lengths of explosive. By E. JONES. London 1926. pp. 21. ill.

—— —— Paper No. 23. A method of trapping the dust produced by pneumatic rock drills. By P. S. HAY. London 1926. pp. 18. ill.

—— —— Paper No. 24. The ignition of firedamp by momentary flames. By NOEL STANLEY WALLS [and others]. London 1926. pp. 18. ill.

—— —— Paper No. 25. Some problems connected with the determination of the fineness of coal dust. By E. F. GREIG. London 1926. pp. 31. ill.

—— —— Paper No. 26. Pyritic oxidation in relation to the spontaneous combustion of coal. By H. MACPHERSON, NEVILLE SIMPKIN, and SYDNEY VICTOR WILD. London 1926. pp. 15 + 10 plates.

—— —— Paper No. 27. Firedamp explosions : the projection of flame. By MAURICE JOHN BURGESS. London 1926. pp. 14. ill.

—— —— Paper No. 28. The spontaneous combustion of coal : the most readily oxidizable constituents of coal. By W. FRANCIS and RICHARD VERNON WHEELER. London 1926. pp. 52. ill.

MINISTRY OF AGRICULTURE AND FISHERIES. Power alcohol production : being a report to the Minister of Agriculture and Fisheries of the Departmental Committee appointed by him in connection with the manufacture of alcohol for power purposes from sugar beet. London 1926. pp. ii + 14.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, December 2nd, 1926, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, on November 3rd, 1926, of William Peter Reina Newlands, who was elected a Fellow on December 3rd, 1891.

T. Cohn and W. Maw were formally admitted Fellows of the Chemical Society.

Certificates were read for the first time in favour of :

Marie Bagnall, M.Sc., 15, Bent Lane, Heaton Park, Manchester.
Bertie Kennedy Blount, Idmiston Grange, Idmiston, Salisbury.
Robert Edward David Clark, 46, London Road, Southborough, Tunbridge Wells.
Bhimbhai Nichhabhai Desai, 21, Warrender Park Terrace, Edinburgh.
Alfred Dudley Husband, A.I.C., Department of Agriculture, Salisbury, S. Rhodesia.
Arthur Frederick Jones, B.Sc., 12, Colville Terrace, Colville Street, Nottingham.
Alfred William Keyes, 14, Wilson Street, Richmond, Auckland, N.Z.
Edward Hubert Lockton, B.Sc., A.R.C.S., 62, Pattison Road, N.W. 2.
Daniel Donald Moir, B.Sc., 116, Orsett Road, Grays.
Sydney William Rowell, B.A., Christ Church, Oxford.
Florence Ruth Shaw, B.Sc., 64, Westfield Road, Toller Lane, Bradford.
Allan Ramsay Stark, B.Sc., A.I.C., 61, St. Vincent Crescent, Glasgow.
Alfred Raymond Steele, B.Sc., 24, Newlands Avenue, West Hartlepool.
Charles William Herbert Story, M.Sc.Tech., Woodside Vicarage, Horsforth.
Arthur Turner, B.Sc., A.I.C., 235, College Street, Long Eaton, Nottingham.
Cyril Joseph Virden, B.A., 24, Richmond Road, Oxford.

Dr. M. A. Whiteley and Mr. E. Horton were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :

A. R. Padmanabha Aiyer, B.A.
Gellert Alleman, PhD., Sc.D.
Shintaro Araki.
Jogendra Chandra Bardhan, D.Sc.
Harold Llewelyn Bassett, M.A., B.Sc., A.I.C.
Henry Norman Bassett.
Dorothy Baylis, M.Sc., A.I.C.
Abram Bevan, B.Sc., A.R.C.S., A.I.C.
Carlo Federico Bonini.
William Audley Bowdler.
Albert Brewin, B.Sc.

Neilson Brown.
Charles Buchanan, B.Sc., Ph.D.
Frederick Cecil Bullock, B.Sc., A.I.C.
Stanley Grove Burgess, B.Sc., A.I.C.
Albert Christopher Candler.
Leslie Hugh Norman Cooper, B.Sc.
Alfred Henry Dickins, B.Sc., A.R.C.S.
Harry Dunnicliff, B.A.
James Walker Durant.
Mona Elizabeth Eck.
John Trevor Evans, B.Sc.
Doswell Foggan.
James Davidson Fulton.
Alan August Goldberg, B.Sc.
Harold Goodburn, B.Sc.
George Aleck Crocker Gough, Ph.D.
Haralal Das Gupta, M.A.
Frank Winston Hall, B.Sc.
Douglas Vernon Nelmar Hardy, B.Sc.
Harold Herbert Hatt, B.Sc., A.I.C.
Frank Swain Hawkins, B.Sc.
Edward Alan William Hebdon, B.Sc.
Jack Reginald Irons Hepburn, M.Sc.
Vivian Charles Hewlett.
Wilfred Eynon Hugh, B.Sc.
Gilbert Frederick Isaacs, B.Sc.
Arupillai Kandiah, B.Sc.
Hermann Kast, Ph.D.
Hideo Katagiri.
Ram Narayan Kayasth, M.Sc., B.Agric.
Leon Jean Pierre Amand Georges Keffler, M.Sc.
Ernest Laurence Kennaway, M.D., D.Sc.
William Simpson Kentish, B.Sc., A.R.C.S.
Frederic Nairne Kerr, B.A.
Kakarlamudi Krishnamurti, M.Sc.
Nurani Sesha Iyer Krishnan, B.Sc.
William Caruth MacTavish, B.Sc.
Manan Kumar Maitra, B.Sc.
Cyril Thomas Mason, M.A., A.I.C.
Herbert Beaumont Matthews, M.Sc.
Norman Philip Millard.
Richard William Morris, A.I.C., A.C.G.F.C.
Cecil Walter André Mundy.
Frank Paulden, jun.
Arthur Hugh Pearce, B.Sc.
Charles Ross Pinnell, B.Sc.
Keshaviah Aswath Narain Rao, B.Sc.
Kenneth Charles Roberts, M.Sc.
Pasquale Romeo, M.D., Ch.D., D.P.H.
Herbert William Rudd, B.Sc.
Karel Sandera, R.Nat.Dr.
Frederick William Saxton.
Sakarlal Vrijlal Shah, B.Sc., Ph.D.
James Francis Shillito, B.Sc.
Lewis Michael Simmons, B.Sc.
Ian Alexander Simpson, B.Sc.
Morris William Stranack.
John Gordon Stubbs, B.Sc.
Harusada Suginome.
Cecil Henry Thorne.
Moung Chit Thoung, B.Sc., A.R.C.S.
Charles Dodgson Walton.
George David Wilkinson.
Maung Ba Yan, B.Sc.
Russell Richard Thomas Young, M.Sc.

The following papers were read :—

"Dicyanates and dibenzoates of triphenylbismuthine and triphenylstibine." By F. CHALLENGER and V. K. WILSON.

"The mechanism of citric and oxalic acid formation from sugar by *Aspergillus niger*. Part I." By F. CHALLENGER, V. SUBRAMANIAM and T. K. WALKER.

"Muconic and hydromuconic acids. Part IV. Geometrical form and reducibility." By E. H. FARMER and W. M. DUFFIN.

"Photochemical equilibrium in nitrogen peroxide." By R. G. W. NORRISH.

Ordinary Scientific Meeting, Thursday, December 16th, 1926, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
Sir William A. Tilden	June 1st, 1865.	Dec. 11th
John Whitfield	Nov. 5th, 1863.	Nov. 12th,

stating that at the Council Meeting held that afternoon the following resolution had been passed :

"On behalf of the Society, the Council desires to express its profound sorrow at the death of its distinguished Past-President, Sir William A. Tilden, who was a Fellow for over 62 years and of this time served the Society as Member of Council, Vice-President, Treasurer, and President, for 37 years.

By the death of Sir William Tilden the Science of Chemistry loses a distinguished worker and the Society a wise and revered Counsellor, who ever had close at heart the interests of the Society to which he rendered such signal service. The Council offers to Lady Tilden its sincere sympathy in her bereavement."

The company present expressed their concurrence in this resolution by rising from their places.

The Society was represented at the funeral on December 15th by the President, several present and past members of the Council, and the Assistant Secretary.

The following announcements were made :

1. That the Council had unanimously resolved to award the Longstaff Medal for 1927 to Professor Robert Robinson, of Manchester, for his distinguished researches in Organic Chemistry.

2. That in accordance with the terms of the Trust Deed establishing the Edward Frank Harrison Memorial Prize, the Selection Committee, consisting of the Presidents of The Chemical Society, The Institute of Chemistry, The Society of Chemical Industry, and The Pharmaceutical Society, had met to consider applications for the Harrison Memorial Prize, which shall be awarded to the chemist of either sex, being a natural born British subject and not over thirty years of age, who, in the opinion of the Selection Committee, shall, during the past five years, have conducted the most meritorious and promising original investigations in Chemistry and published the results of those investigations in a scientific periodical or periodicals. The Selection Committee had unanimously resolved that the Prize for 1926, of the value of £150, should be awarded to Dr. Charles Robert Harington, of University College, London.

Dr. Harington has within the last five years synthesised the active principle of the thyroid gland (thyroxine); he has determined

its constitution and worked out a practical process by which it may be produced on a large scale. This artificial product has been found to have the same physiological efficacy as the active principle in the natural extract.

The presentation of the Longstaff Medal and of the Harrison Memorial Prize will take place at the Annual General Meeting of the Chemical Society on March 24th, 1927.

The following were formally admitted Fellows of the Chemical Society: Gwyn Williams, Annie E. Hamp, Mona E. Eck, and J. R. I. Hepburn.

Certificates were read for the first time in favour of:

Mollie Barr, Langton, Erith Road, Belvedere, Kent.
George Richard Butterfield, B.Sc., Selwyn College, Dunedin, N.Z.
John Stanley Davies, B.Sc., 9, Winchester Avenue, Brondesbury, N.W. 6.
David Idris Jones, B.Sc., 118, Gough Road, Edgbaston, Birmingham.
Ernest Leese, Portland, Whangarei, N.Z.
Charles William Long, B.Sc., Mayesvale, Shrubbery Road, Bromsgrove.
Bernard Charles Saunders, B.A., Pembroke College, Cambridge.
Maurice Schofield, B.A., B.Sc., 64, Oakleigh Road, Clayton, Bradford.
Robert Kenworthy Schofield, M.A., Ph.D., The University, Durham.
Percy Henry Snow, Lamorna, Greenhill Road, Moseley, Birmingham.
Mary Elizabeth Stevens, 521, King's Road, Chelsea, S.W. 10.
Richard Arthur Beater Tapley, B.A., B.Sc., 234, Evering Road, Clapton, E. 5.
Edmund White, 16 and 17 Cross Street, Hatton Garden, E.C. 1.

The following papers were read:

"On active nitrogen. Part II." By E. J. B. Willey and E. K. Rideal.

"Low-temperature oxidation at charcoal surfaces. Part III. The behaviour of blood charcoal and the influence of temperature on the reaction rate." By E. K. Rideal and W. M. Wright.

"Investigations on the dependence of rotatory power on chemical constitution. Part XXXI. The resolution of a sulphilimine into its optically active forms." By S. G. Clarke, J. Kenyon, and H. Phillips.

The Council has made the following Grants from the Research Fund:

	£	s.	d.
Mobility and unsaturation of triad systems: sulphur-nitrogen heterocyclic rings. R. F. Hunter	5	0	0
The chemistry of Balbiano's acid. J. C. Bardhan	10	0	0
Mutual solubility relations of certain binary liquid systems. H. F. Betts	5	0	0
The relative activation of halogens by nitro-groups. A. Brewin	7	10	0
Nitration of benzyl derivatives of phosphonium and arsonium hydroxides and other benzyl derivatives of metals and metalloids. F. Challenger	5	0	0

Nitration of sulphoxides and sulphones. B. C. Chatterjee ...	7	10	0
The acid and salt effects associated with the catalytic activities of acids. H. M. Dawson	20	0	0
The oxygen content of wrought iron and steel. C. H. Desch and H. H. Rains	20	0	0
Tautomerism of ketones of the type *cyclo*hexanylacetone. A. H. Dickins	10	0	0
Stereo-chemistry of the 4 co-ordinated platinum compounds. H. Dunnicliff	15	0	0
Properties of conjugated compounds. J. T. Evans	8	0	0
The constitution of morphine. J. D. Fulton	10	0	0
The compressibilities of binary gas mixtures. C. W. Gibby ...	15	0	0
Studies on labile halogen atoms. D. T. Gibson	5	0	0
Fittig equilibria of certain unsaturated acids. A. A. Goldberg	10	0	0
Quasi-aromatic structures (*continued*). F. R. Goss	10	0	0
Solubility of two salts with a common ion in anhydrous alcoholic solution. F. S. Hawkins	5	0	0
Chemistry of extended conjugated compounds. A. T. Healey	7	0	0
A study of perphosphates. S. Husain	10	0	0
E.M.F. Measurements of concentration cells containing solutions of alkali iodides in absolute alcohol. G. F. Isaacs	5	10	0
Three-carbon tautomerism. J. D. Johnson	10	0	0
Mutual solubility of liquids. D. C. Jones	5	0	0
Tautomeric changes in unsaturated nitriles. A. Kandiah ...	10	0	0
Chemistry of the three-carbon system. W. S. Kentish	7	10	0
Attempt to synthesise dimethylethylethoxy-indolenone. W. O. Kermack	10	0	0
Ammines of rhodium. H. J. S. King	20	0	0
Addition of esters to unsaturated compounds. C. D. Langford	10	0	0
The diphenyl series (*continued*). R. J. W. Le Fèvre	10	0	0
Properties of conjugated compounds. B. Levin	10	0	0
Mobility of derivatives of acetoacetic ester. E. H. Lockton ...	10	0	0
Glucosides. A. K. Macbeth	15	0	0
Labile nature of the halogen atom. A. K. Macbeth	5	0	0
Essential oil of *Myoporum laetum* (Forst.). F. H. McDowall ...	10	0	0
Synthesis of 1 : 2-dihydroquinaldine. F. A. Mason	5	0	0
Competitive substitution effects in the benzene nucleus. H. A. Mayes	5	0	0
Thallium compounds. R. C. Menzies	10	0	0
Synthesis of unsymmetrical compounds in the diphenyl series. D. D. Moir	5	0	0
Oxidation products of eleostearic glyceride. R. S. Morrell and S. Marks	15	0	0
Effect of substituents on the mobility and unsaturation of triad systems of the aminothiazole type. R. W. Morris ...	6	0	0
Quantum sensitivity of certain gaseous photochemical reactions. R. G. W. Norrish	5	0	0
Relative directing influences of the halogen atoms. C. R. Pinnell	5	0	0
Effect of so-called strainless rings on the carbon tetrahedral angle. K. A. N. Rao	10	0	0
Butyl benzyl aniline. J. Reilly	7	10	0
Ketonic derivatives of ditolyl ethers. J. Reilly and P. J. Drumm	7	10	0

Velocity of formation of non-aromatic diazonium salts. J. Reilly and J. J. Moore	10	0	0
Intramolecular rearrangement of the alkyl derivatives of α- and β-naphthylamines. J. Reilly and B. O'Neill	5	0	0
Purple pigment from *Chromobacterium violaceum*. J. Reilly and G. Pyne	6	10	0
Synthesis of glucosides and anthocyanidin glucosides. A. Robertson	20	0	0
Certain higher terpenes and related compounds. J. M. Robertson	15	0	0
(a) The mobility of three-carbon tautomeric systems. (b) Nitration of ω-p-xylyl compounds. E. Rothstein	20	0	0
Relative reactivities of halogen compounds. H. W. Rudd ...	7	0	0
Variation in the viscosity of gases up to 1,000° C. W. G. Shilling	10	0	0
Orientation effects in the diphenyl series. J. F. Shillito ...	5	0	0
Preparation and properties of halogenated naphthalene derivatives. J. B. Shoesmith	10	0	0
Synthesis of *apo*fencho-camphoric acid. W. F. Short	5	0	0
Heats of solution and dilution of some salts in non-aqueous solvents. W. E. Soper	5	0	0
Preparation of a compound analogous in constitution to *iso*-cyanin. H. R. Stevens	15	0	0
Interaction of the Grignard reagent and cupric chloride. J. G. Stubbs	5	0	0
Synthesis of $N:N'$-dicarbazyl. S. H. Tucker	2	0	0
Internuclear attraction effects. E. E. Turner	5	0	0
Reduction of unsaturated ketones and other unsaturated compounds. I. Vogel.	12	0	0
Grignard compounds from β-chloroethylphenyl ether and its derivatives. E. Walton	5	0	0
Halogenation of carboxylic acids and their anhydrides. H. B. Watson	5	0	0
Reactions with ketones. K. N. Welch	5	0	0
(a) Migratory aptitudes of methoxy-phenyl groups. (b) Substitution orientation in various heterocyclic compounds. E. W. Wignall	16	0	0
	£592	10	0

KAMERLINGH ONNES MEMORIAL LECTURE

The Kamerlingh Onnes Memorial Lecture will be delivered by Professor Ernst Cohen, of Utrecht, at the Institution of Mechanical Engineers, Storey's Gate, S.W. 1, on Thursday, February 10th, 1927, at 8 p.m.

List of Papers, or Abstracts thereof, received between November 18th and December 16th, 1926. (This List does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"The unsaturation of heterocyclic ring systems. Part III. The benzbisthiazole derivatives." By S. R. H. Edge and R. F. Hunter.

"The effect of *gem*-dialkyl substituents on the formation and stability of the anhydrides of dicarboxylic acids." By E. H. Farmer and J. Kracovski.

"Organic derivatives of silicon. Part XXXII. The carbon-silicon binding." By F. S. Kipping.

"The constitution of carnitine. Part I. The synthesis of γ-amino-α-hydroxy-*n*-butyric acid trimethylbetaine." By J. W. C. Crawford and J. Kenyon.

"Complex formation amongst nitrates. Part I. The ternary system copper nitrate–cobalt nitrate–water." By K. W. Wilcox and C. R. Bailey.

"Synthetical experiments on protopine and allied alkaloids. Part I." By T. S. Stevens.

"Acid and salt effects in catalysed reactions. Part IV. Derivation of a general equation for the catalytic activity of acids. The general catalytic catenary." By H. M. Dawson.

"Constitutional studies in the monocarboxylic acids derived from sugars. Part IV. The isomeric lactones obtained from arabinose. The autocondensation of γ-arabinose derivatives." By J. Pryde and R. W. Humphreys.

"Note on a derivative of αα′α″-triaminotrimethylamine." By F. B. Kipping and F. G. Mann.

"The reduction of *o*-nitrophenyl *iso*diazomethanes." By F. D. Chattaway and A. J. Walker.

"The ratio of the heats of combustion of benzoic acid and salicylic acid. (A reply to P. E. Verkade and J. Coops)." By E. Berner.

"Optical activity and the polarity of substituent groups. Part VI." By H. G. Rule.

"The influence of different centres of absorption on the spectra of substances." By J. E. Purvis.

"The position of the sugar nucleus in the quercetin glucosides." By G. F. Attree and A. G. Perkin.

"Nature of the alternating effects in carbon chains. Part XII. Nitration of some derivatives of methyl benzylaminoformate." By J. W. Baker.

"Studies in optical superposition. Part VIII. The *l*-menthylamine, brucine, and strychnine salts of mucic and *allo*mucic acid." By T. S. Patterson and J. D. Fulton.

"Studies in the penthiane series. Part I. The Dieckmann reaction applied to ethyl thiodipropionate." By G. M. Bennett and L. V. H. Scorah.

"Benzyl δ-chlorobutyl ether: a new unsymmetrical derivative of tetramethylene glycol." By G. M. BENNETT and A. L. HOCK.

"The influence of the sulphur atom on the reactivity of adjacent atoms or groups. Part I. A qualitative comparison of the reactivities of chlorine and hydroxyl in the α-, β-, γ-, and δ-positions to a sulphur atom." By G. M. BENNETT and A. L. HOCK.

"The burning of carbon disulphide near the limit for the propagation of flame, with some remarks on the ignition point of sulphur." By A. G. WHITE.

"A spectrographic method for the determination of dissociation constants." By R. A. MORTON and A. H. TIPPING.

"An electrometric study of tungstic acid." By H. T. S. BRITTON.

"The unsaturation of heterocyclic ring systems. Part IV. The 3 : 5-di-iminotetrahydro-1 : 2 : 4-thiodiazole system." By R. F. HUNTER and H. MORLAND.

"The reaction between Grignard reagents and 10-chlorophenoxarsine, and 10-chloro-5 : 10-dihydrophenarsazine." By J. A. AESCHLIMANN.

"Photochemical equilibrium in nitrogen peroxide. Part II." By R. G. W. NORRISH.

"The chemistry of the glutaconic acids. Part XXI. Non-formation of Δ^2-tetrahydro*iso*phthalic acid by reduction of *iso*phthalic acid." By E. H. FARMER and H. L. RICHARDSON.

"The soluble alkaline-earth aluminates." By H. T. S. BRITTON.

"The effect of pressure on the limits for the propagation of flame in ether-air." By A. G. WHITE.

"10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part IV. Carboxy-derivatives." By H. BURTON and C. S. GIBSON.

"Studies in the fenchene series. Part I. A synthesis of apofenchocamphoric acid." By W. F. SHORT.

"The solubility of nitroglycerol in water." By W. LEDBURY and C. W. FROST.

"The action of nitrous acid on *ar*-tetrahydro-α-naphthol, and on 5 : 8- and 5 : 6(or 7 : 8)-dihydro-α-naphthols." By F. M. ROWE and E. LEVIN.

"Electrometric study of the precipitation of silicates." By H. T. S. BRITTON.

"Experiments on the synthesis of anthocyanins. Part II. The synthesis of 3- and 7-glucosidoxyflavylium salts." By A. ROBERTSON and R. ROBINSON.

"The decomposition of β-3-indolylpropionic azide." By R. H. F. MANSKE and R. ROBINSON.

"Oxindole-3-aldehyde and -3-glyoxylic acid." By J. M. GULLAND and R. D. HAWORTH.

"The isomerism of reduced derivatives of quinoxaline. Part II. The stereoisomeric 2 : 3-dimethyl-1 : 2 : 3 : 4-tetrahydroquinoxalines." By C. S. GIBSON.

"The glow of arsenic." By H. J. EMELÉUS.

"On the origin of the spectrum of the glow of phosphorus." By H. J. EMELÉUS and R. H. PURCELL.

"The photodecomposition of chlorine water and of aqueous hypochlorous acid solutions. Part II." By A. J. ALLMAND, P. W. CUNLIFFE, and R. E. W. MADDISON.

"A contribution to the theory of heterogeneous catalysis. Part I." By F. J. WILKINS.

"The nature of the alternating effect in carbon chains. Part XIII. The directive action of groups of the form $-CH_2 \cdot SO_2 \cdot R$ in aromatic substitution." By C. K. INGOLD, E. H. INGOLD, and F. R. SHAW.

"Electrometric study of the precipitation of phosphates." By H. T. S. BRITTON.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ADIE, RICHARD HALIBURTON. Chemistry for agricultural students. London 1926. pp. viii + 358. ill. 5*s*. 6*d*. net. (*Recd.* 10/12/26.) From the Publishers: The University Tutorial Press.

BERICHTE DER DURSTIGEN CHEMISCHEN GESELLSCHAFT. Berlin 1886. pp. [iv + 52]. (*Reference.*)

From Professor Holland Crompton.

BUNSEN, ROBERT. Gasometrische Methoden. Braunschweig 1857. pp. x + 308. ill. From Sir Robert Robertson, K.B.E.

CAVEN, ROBERT MARTIN. Gas and gases. London 1926. pp. 256. ill. 2*s*. net. (*Recd.* 10/12/26.)

From the Publishers: Messrs. Williams & Norgate.

CLARKE, HANS THACHER. A handbook of organic analysis: qualitative and quantitative. 4th edition. London 1926. pp. xii + 364. ill. 8*s*. 6*d*. net. (*Recd.* 26/11/26.)

From the Publishers: Messrs. Edward Arnold & Co.

FERNÁNDEZ, OBDULIO. Arquitectura molecular de los agentes terapéuticos. Toledo 1926. pp. viii + 238. 12.50 *ptas*. (*Recd.* 13/12/26.) From the Author.

FISCHER, ARTHUR. Elektroanalytische Schnellmethoden: Elek-

troanalyse unter Bewegen von Elektrolyt oder Elektrode. 2nd edition. By ALADAR SCHLEICHER. (Die chemische Analyse, Vol. IV/V.) Stuttgart 1926. pp. 430. ill. (*Reference.*) *M* 24.

From the Publisher : Herr Ferdinand Enke.

FRESENIUS, CARL REMIGIUS. Anleitung zur quantitativen chemischen Analyse. 3rd edition. Braunschweig 1853–4. pp. xx + xii + 620. ill.

—— Anleitung zur qualitativen chemischen Analyse. 9th edition. Braunschweig 1856. pp. xx + 348. ill.

From Sir Robert Robertson, K.B.E.

FRIEND, JOHN NEWTON. Iron in antiquity. London 1926. pp. viii + 222. ill. 10*s.* 6*d.* net. (*Recd.* 18/11/26.)

From the Author.

HIGGINS, WILLIAM. Experiments and observations on the atomic theory, and electrical phenomena. Dublin 1814. pp. vi + 180. (Second copy.) From Mr. H. C. Bell.

KAHN, MAX, and GOODRIDGE, FREDERICK G. Sulfur metabolism : a review of the literature. Philadelphia 1926. pp. xiv + 832. (*Recd.* 1/12/26.) From Mrs. Max Kahn.

KOLTHOFF, I. M. Indicators : their use in quantitative analysis and in the colorimetric determination of hydrogen-ion concentration. Authorized translation based upon the 2nd German edition. By N. HOWELL FURMAN. New York 1926. pp. xii + 270. ill. 17*s.* 6*d.* net. (*Recd.* 22/11/26.)

From the London Publishers : Messrs. Chapman & Hall.

LEHNER, SIGMUND. Ink manufacture : including writing, copying, lithographic, marking, stamping, typewriter, and laundry inks. 3rd English edition. Revised and compared with the 7th German edition by CHARLES AINSWORTH MITCHELL. London 1926. pp. viii + 212. 7*s.* 6*d.* net. (*Recd.* 9/12/26.)

From Mr. C. Ainsworth Mitchell.

MOHR, FRIEDRICH. Lehrbuch der chemisch-analytischen Titrirmethode. 2nd edition. Braunschweig 1862. pp. xx + 590. ill.

From Sir Robert Robertson, K.B.E.

OPTICAL CONVENTION. 1926. Proceedings. 2 vols. London [1926]. pp. x + 492 + vi, viii, 493 to 1052 + vi. (*Reference.*)

From the Convention.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND. Agricultural research in 1925. London 1926. pp. viii + 174. (*Reference.*)

From the Society.

SOCIÉTÉ DE CHIMIE INDUSTRIELLE. Cinquième Congrès de Chimie Industrielle (*Chimie & Industrie*, Special No.) Paris 1926. pp. 732 + iii. ill. (*Reference.*)

From the Publishers : Société de Chimie Industrielle.

SWEDEN. *Arsenikkommissionen.* Bilagorna I to XIX, and Betänkande. Lund 1919. (*Recd.* 10/12/26.)

From the Director.

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PRINTED IN GREAT BRITAIN BY RICHARD CLAY & SONS, LIMITED, BUNGAY, SUFFOLK.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, January 20th, 1927, at 8 p.m. In the absence of the President, the Chair was occupied by Dr. ALEXANDER SCOTT, F.R.S., Vice-President.

Reference was made to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
Joseph J. Acworth	March 4th, 1875.	Jan. 3rd, 1927.
George Christopher	June 18th, 1874.	Aug. 7th, 1926.
Frank Cope	Feb. 16th, 1899.	May 12th, 1926.
William B. Hart	May 7th, 1891.	Dec. 29th, 1926.
Frederick H. Painter	Feb. 18th, 1909.	Dec. 12th, 1926.
Edward H. Rennie	Feb. 6th, 1879.	Jan. 1927.
Thomas A. Reid	Dec. 7th, 1893.	Nov. 15th, 1926.
Frederick J. Stoakley	May 5th, 1921.	Jan. 16th, 1927.

The CHAIRMAN announced that the names of the members of Council who retire at the Annual General Meeting on March 24th, 1927, and who are ineligible for re-election to the same office until after the lapse of one year, are as follows :

Vice-President who has filled the office of President :
Prof. W. H. Perkin.

Vice-Presidents who have not filled the office of President :
Mr. A. J. Greenaway and Prof. J. C. Philip.

Ordinary Members of Council :

(*a*) Town Members :
Dr. O. L. Brady, Dr. A. E. Dunstan, and Prof. T. S. Moore.

(*b*) Country Members :
Prof. D. R. Boyd, Mr. B. Lambert, and Prof. F. L. Pyman.

The following vacant places fall due to be filled at the Annual General Meeting on March 24th, 1927, in accordance with the Bye-Laws :

Vice-Presidents who have filled the office of President	One vacancy.
Vice-Presidents who have not filled the office of President	Two vacancies.

Ordinary Members of Council:

(*a*) Town Members ... ... Three vacancies.
(*b*) Country Members ... ... Three vacancies.

Certificates were read for the first time in favour of:

Cameron Gordon Anderson, B.Sc., 23, Warwick Road, Sparkhill, Birmingham.
Gilbert Edward Archey, M.A., 10, Laurie Avenue, Auckland, N.Z.
Eric Sidney Bacon, B.Sc., A.I.C., 78, South Street, Ponders End, Middlesex.
Sydney Thomas Bowden, B.Sc., A.I.C., University College, Newport Road, Cardiff.
Satyendra Nath Chakravarti, M.Sc., 96, Abingdon Road, Oxford.
Lena Winifred Frost, B.Sc., 4, Sandy Lane, Pendleton, Manchester.
Henry Frank Gillbe, B.Sc., A.I.C., 8, Myddleton Buildings, High Street, Islington.
William Honneyman, B.Sc., F.I.C., Ph.C., 17, Cyprus Park, Belfast.
Peter Jayaweera Jayaratne, B.Sc., Seevali School, Ratnapura, Ceylon.
Sin-iti Kawai, Chemical Institute, Tohoku Imperial University, Sendai, Japan.
Alexander Anderson Kennedy, 86, Babbacombe Road, Bromley.
Alkin Lewis, B.Sc., A.I.C., 74, Sutherland Avenue, W. 9.
Rt. Hon. Sir Alfred Moritz Mond, Bart., M.P., 35, Lowndes Square, S.W. 1.
Masuo Murakami, M.Sc., Tohoku Imperial University, Sendai, Japan.
Roger Saxon Nickalls, 61, Elm Park Gardens, S.W. 10.
Mary Alice Marcia Penrose, B.Sc., 9, Grove Road, East Cliff, Bournemouth.
Eric Charles Pickering, Ph.D., B.Sc., A.I.C., 14, Emperor's Gate, South Kensington, S.W. 7.
Stanley Ernest Pusey, 54, Cranbury Road, Fulham, S.W. 6.
Mysore Guru Srinivasa Rao, Central College, Bangalore, India.
Alfred Leonard Read, B.Sc., 154, Southbury Road, Enfield.
Rodney Thomas Shepherd, B.A., Westminster Training College, Horseferry Road, S.W. 1.
Shintaro Ogawa, Tohoku Imperial University, Sendai, Japan.
Walter Lewis Lee Smith, B.Sc., A.I.C., 9, Newton Road, Faversham.
Robert Spence, B.Sc., 18, Croft Avenue, South Shields.
Frederick Robert Storrie, B.Sc., A.I.C., 1, Carriagehill Drive, Paisley.
Robert Bruce Walker, M.A., Buckingham, Que., Canada.
Francis John Watson, M.A., M.Sc., 28, Bishop's Road, Paddington, W. 2.
Albert Greville White, B.Sc., A.I.C., 45, Caledonia Road, Saltcoats.
Robert Scott Wishart, M.A., D.Sc., Copthorne, Fawley.
Norman Edward Wood, B.Sc., 422, Brockley Road, Crofton Park, S.E. 4.
Lakshmi Narayan Yadava, M.Sc., Bareilly College, Bareilly, India.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2) in favour of:

Clarence A. Hall, 7951, Winston Road, Chestnut Hill, Phila., Pa., U.S.A.
Isaac Silberman, F.I.C., Bedford Pharmacy, Teoville, Johannesburg, S. Africa.

The following papers were read:

"The glow of arsenic." By H. J. EMELÉUS.

"On the origin of the spectrum of the glow of phosphorus." By H. J. EMELÉUS and R. H. PURCELL.

" Ring-chain tautomerism. Part XVI. The effect of two adjacent *gem*-dimethyl groups on the ease of formation of the *cyclo*-pentane ring." By I. VOGEL.

ORDINARY SCIENTIFIC MEETING, THURSDAY, FEBRUARY 3rd, 1927, AT 8 P.M.

The following papers will be read :

" The nature of the alternating effect in carbon chains. Part XIV. The directive action of some groups of the form –CR'R''·CO·R· in aromatic substitution." By J. W. BAKER and C. K. INGOLD.

" The nature of the alternating effect in carbon chains. Part XVII. The directive action of the groups $\cdot CH_2 \cdot CH_2 \cdot NO_2$, $\cdot CH{:}CH \cdot NO_2$, and $\cdot C(NO_2){:}CHR$ in aromatic substitution." By J. W. BAKER and I. S. WILSON.

" The Storch equation, a general dilution formula, and the validity of the law of mass action at limiting dilutions." By A. FERGUSON and I. VOGEL.

" The calculation of the equivalent conductivity of aqueous solutions of strong electrolytes at infinite dilution. Part II. Application to data at 0°, 18°, and 25° C." By A. FERGUSON and I. VOGEL.

" The calculation of the equivalent conductivity of aqueous solutions of strong electrolytes at infinite dilution. Part III. The mobilities of the hydrogen and the hydroxyl ions." By A. FERGUSON and I. VOGEL.

LECTURE.

A Memorial Lecture in honour of the late Kamerlingh Onnes will be delivered by Professor Dr. Ernst Cohen, of Utrecht, on Thursday, February 10th, 1927, at 8 p.m., at the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. 1.

ANNUAL GENERAL MEETING AND ANNIVERSARY DINNER.

The Annual General Meeting will be held at Burlington House on Thursday, March 24th, 1927, at 4 p.m., and the Anniversary Dinner will take place the same evening at the Hotel Victoria, Northumberland Avenue, W.C. 2. Further particulars will be circulated later.

List of Papers, or Abstracts thereof, received between December 16th, 1926, and January 20th, 1927. (This List does not include the titles of papers, or abstracts thereof, which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Acid soaps: a crystalline potassium hydrogen dioleate." By J. W. McBain and A. Stewart.

"Studies of aromatic thionyl and chlorothionyl derivatives. Part I. Thionylcatechol and dichlorothionylquinol." By A. Green.

"The platini-platino chloride electrode. A new type of chlorine electrode." By V. F. Miller and H. Terrey.

"The nature of the alternating effect in carbon chains. Part XIV. The directive action of some groups of the form –CR'R''·CO·R· in aromatic substitution." By J. W. Baker and C. K. Ingold.

"The nature of the alternating effect in carbon chains. Part XV. The directive action of some groups of the form –CO·R in aromatic substitution." By K. E. Cooper and C. K. Ingold.

"The condensation of substituted anilines with *cyclo*pentanone cyanohydrin. Derivatives of 1-anilino*cyclo*pentane-1-carboxylic acid." By S. H. Oakeshott and S. G. P. Plant.

"Synthesis of 5 : 6-dimethoxyindole and its 2-carboxylic acid." By A. E. Oxford and H. S. Raper.

"The condensation of *p*-hydroxybenzoic acid with chloral." By F. D. Chattaway and F. C. y Prats.

"The decomposition products of menthyl esters of sulphonic acids." By T. S. Patterson and I. M. McAlpine.

"The influence of solvents on the rotation of optically active compounds. Part XXIV. Menthyl benzenesulphonate, menthyl naphthalene-α-sulphonate, and menthyl naphthalene-β-sulphonate in various solvents." By T. S. Patterson and I. M. McAlpine.

"The complex chlorides of tervalent molybdenum." By W. R. Bucknall, S. R. Carter, and W. Wardlaw.

"The viscosity of ether at low temperatures." By E. H. Archibald and W. Ure.

"The nitration of benzil, 3 : 5 : 3' : 5'-tetranitrobenzil." By F. D. Chattaway and E. A. Coulson.

"The influence of nitro-groups on the reactivity of substituents in the benzene nucleus. Part IX. 2 : 3- and 2 : 5-Dinitro-4-methoxytoluenes." By H. E. Dadswell and J. Kenner.

"The union of benzoylacetonitrile with organic bases in the presence of salicylaldehyde. Part I." By P. Krishnamurti.

"Aminobenzthiazoles. Part VIII. The effect of substituents on tautomeric systems of the aminothiazole type and the

synthesis of nuclear substituted 1-aminobenzthiazole derivatives." By G. M. Dyson, R. F. Hunter, and R. W. Morris.

"The synthesis of meso-alkyl and meso-aryl anthracene derivatives. Part I." By E. de B. Barnett, J. W. Cook, and I. G. Nixon.

"Aminobenzthiazoles. Part IX. The unsaturation of aminothiazoles containing a static triad system, the mechanism of the transformation of arylthiocarbamides into aminobenzthiazole bromides, and the synthesis of some 1-dimethylaminobenzthiazoles." By R. F. Hunter and E. R. Styles.

"The velocity of formation of quaternary ammonium salts from trimethylamine and benzyl chloride and the three mononitrobenzyl chlorides." By H. McCombie, H. A. Scarborough, and F. F. P. Smith.

"The nitration of *m*-iodophenol." By H. H. Hodgson and F. H. Moore.

"The partition of hydrogen chloride between water and benzene." By R. W. Knight and C. N. Hinshelwood.

"Pseudo-ternary systems containing sulphur. Part II. The system sulphur–benzoic acid." By D. L. Hammick and W. E. Holt.

"Colour and molecular geometry. Part VI. Explanation of the colours of the anthocyans." By J. Moir.

"Acid and salt effects in catalysed reactions. Part VI. The embryonic stage of an auto-catalysed reaction. Generalised form of the simple autocatalytic catenary." By H. M. Dawson.

"The reaction between diazonium salts and malonyldiurethane." By M. A. Whiteley and D. Yapp.

"The mechanism of the reaction between aluminium–iodine–ethyl alcohol and water. The preparation of ethyl iodide." By A. O. Jones and G. M. Green.

"The optical resolution of chloroiodoacetic acid." By A. M. McMath and J. Read.

"The preparation of *N*-substituted *o*-benzoicsulphinides." By E. W. McClelland.

"The nature of the alternating effect in carbon chains. Part XVI. The nitration of some γ-phenylpropylamine derivatives." By C. K. Ingold and I. S. Wilson.

"On the alleged retardation of certain reactions by light." By A. J. Allmand and R. E. W. Maddison.

"The nature of the alternating effect in carbon chains. Part XVII. The directive action of the groups $\cdot CH_2 \cdot CH_2 \cdot NO_2$, $\cdot CH{:}CH \cdot NO_2$, and $\cdot C(NO_2){:}CHR$ in aromatic substitution." By J. W. Baker and I. S. Wilson.

"The production of fog in the neutralisation of alkali with hydrogen halides." By H. O. ASKEW.

"The Storch equation, a general dilution formula, and the validity of the law of mass action at limiting dilutions." By A. FERGUSON and I. VOGEL.

"The calculation of the equivalent conductivity of aqueous solutions of strong electrolytes at infinite dilution. Part II. Application to data at 0°, 18°, and 25° C." By A. FERGUSON and I. VOGEL.

"The calculation of the equivalent conductivity of aqueous solutions of strong electrolytes at infinite dilution. Part III. The mobilities of the hydrogen and the hydroxyl ions." By A. FERGUSON and I. VOGEL.

"The mechanism of reactions induced by hydrogen chloride between aromatic aldehydes and aldehydecyanhydrins in solution." By B. H. INGHAM.

"Ring-chain tautomerism. Part XV. The hydroxy-lactone type." By E. ROTHSTEIN and C. W. SHOPPEE.

"Solubility influences. Part IV. The salting-out of aniline from aqueous solutions." By S. GLASSTONE, J. BRIDGMAN, and W. R. P. HODGSON.

"The constitution of the supposed *N*-methylene sulphurous acid derivatives of amines. Part I. Examination by the Elvove method." By G. NEWBERY and M. A. PHILLIPS.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, FEBRUARY 3rd, 1927.

ANDERSON, CAMERON GORDON, 23, Warwick Road, Sparkhill, Birmingham. British. Research Student, Chemistry Dept., University of Birmingham, B.Sc., 1st Class Honours, Chemistry. Priestley Scholar, Chemistry. Frankland Prizeman, Chemistry. (*Signed by*) W. N. Haworth, H. M. Spittle, W. Charlton, H. D. K. Drew, L. W. Needham.

ARCHEY, GILBERT EDWARD, 10, Laurie Avenue, Auckland. British. Secretary, Auckland Institute. M.A. (N.Z.). (*Signed by*) F. P. Worley, W. Frank Short, J. C. Andrews.

BACON, ERIC SIDNEY, 78, South St., Ponders End, Mddx. English. Chemist. B.Sc., 2nd Class Honours Chemistry (London). Associate of the Institute of Chemistry. (*Signed by*) T. J. Drakeley, G. J. Avey, H. J. S. King.

BAGNALL, MARIE, 15, Bent Lane, Heaton Park, nr. Manchester. British. Librarian and abstractor, British Cotton Industry Research Association, Didsbury. B.Sc. (Vict.), 1920. M.Sc. (Vict.), 1925. Thesis: Zymolysis of Starch and Cellulose. (*Signed by*) J. C. Withers, R. G. Fargher, D. Clibbens.

BARR, MOLLIE, Langton, Erith Rd., Belvedere, Kent. British. Student of Chemistry at Bedford College, London University. (*Signed by*) Holland Crompton, J. F. Spencer, Jessie Stewart.

BLOUNT, BERTIE KENNEDY, Idmiston Grange, Idmiston, nr. Salisbury. British. Undergraduate Student of Trinity College, Oxford. Reading for Honours in the School of Chemistry. (*Signed by*) M. P. Applebey, S. G. P. Plant, C. N. Hinshelwood.

BOAKE, EDMOND JOHNSON, Widford Lodge, Chelmsford. British. Director of Companies. Managing Director of A. Boake, Roberts & Co., Ltd., etc., Heavy and Fine Chemical Manufacturers. B.A. Camb. (Honours). (*Signed by*) W. J. Uglow Woolcock, W. H. Perkin, Leonard A. Levy.

BOWDEN, SYDNEY THOMAS, University College, Newport Road, Cardiff. Welsh. Assistant Lecturer and Demonstrator. B.Sc. (Honours), Wales. A.I.C. Formerly Fellow of the University of Wales. (*Signed by*) W. J. Jones, E. P. Perman, N. M. Cullinane.

BUTTERFIELD, GEORGE RICHARD, Selwyn College, Dunedin, N.Z. British. Medical Student. Completed B.Sc. course at Auckland Univ. College. Commencing Medical course at Otago University. I desire to keep in touch with developments of chemistry. (*Signed by*) F. P. Worley, W. F. Short, John R. Hosking.

CHAKRAVARTI, SATYENDRA NATH, 96, Abingdon Road, Oxford. British subject. Research Student in Organic Chemistry, Dyson Perrins Laboratory. B.Sc., First Class. M.Sc. (Organic Chemistry), First Class, of Lucknow University. Studying for D.Phil. at Oxford University. Worked on "The action of toluene sulphonic ester on nitrophenols" under Dr. S. M. Sane, Reader in Organic Chemistry, Lucknow University. (*Signed by*) W. H. Perkin, R. D. Haworth, V. M. Trikojus, S. G. P. Plant.

CHILVERS, CECIL, 29, St. Luke's Avenue, Ilford, Essex. British. Chemist (Anglo-American Oil Company). B.Sc. (London). A.I.C. 1922–1926, Temporary Assistant Chemist, The Government Laboratory. (*Signed by*) Robert Robertson, Geo. Stubbs, J. J. Fox, J. F. Hirst.

CLARK, ROBERT EDWARD DAVID, 46, London Road, Southborough, Tunbridge Wells. English. Student. Exhibitioner of St. John's College, Cambridge. Candidate for Natural Science Tripos. (*Signed by*) Hamilton McCombie, Gordon M. Wright, William Blakey.

DAVIES, JOHN STANLEY, 9, Winchester Avenue, Brondesbury, N.W. 6. British. Pharmaceutical Chemist. Bachelor of Science (London, 1925). (*Signed by*) R. H. Doughty, E. H. Williams, R. J. Evans.

DESAI, BHIMBHAI NICHHABHAI, c/o Miss Dickson, 21, Warrender Park Terrace, Edinburgh. Indian. Research Student (King's Buildings, Chemistry Dept., Edinburgh University, Edinburgh). Research Worker and Lecturer in Chemistry (1924–1926), Wilson College, Bombay. Two papers submitted to Indian Science Congress, one in 1924 and the other in 1925. Two papers, one on "Coagulation of Thorium Hydroxide" and the other on "Viscosity Measurements of Ceric Hydroxide Sol and Gel," are in course of publication in the *Journal of Phys. Chemistry*. (*Signed by*) James Walker, Ernest Bowman Ludlam, John E. Mackenzie.

FROST, LENA WINIFRED, 4, Sandy Lane, Pendleton, Manchester. British. Second Mistress at Pendleton High School for Girls, Manchester. In charge of Chemistry Laboratory and all Chemistry Classes. I desire to receive the Society's publications in order to keep in touch with the progress of chemistry. B.Sc., Birmingham. Also studied at the University of Manchester and Salford Technical College. Over 8 years' experience in the teaching of Matri-

culation and Higher School Certificate Chemistry. (*Signed by*) B. Prentice, Vernon Edge, J. W. McMyn, Harold B. Dixon, Frederick Challenger, John F. Wilkinson.

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SCHEIBER, JOHANNES, with the collaboration of KURT SÄNDIG. Lacke und ihre Rohstoffe. Leipzig 1926. pp. xviii + 642. ill. *M.* 32.40. (*Recd.* 29/12/26.)

SCHŒN, M. Le problème des fermentations: les faits et les hypothèses. Paris 1926. pp. iv + 200. ill. 21.50 *fr.* (*Recd.* 22/12/26.)

SÜVERN, KARL. Die künstliche Seide: ihre Herstellung und Verwendung. 5th edition. With the collaboration of H. FREDERKING. Berlin 1926. pp. xx + 1108. ill. *M.* 64.50. (*Recd.* 29/12/26.)

VERNE, J. Les pigments dans l'organisme animal: chimie, morphologie, physiologie, éthologie. Paris 1926. pp. xvi + 604. ill. 28 *fr.* (*Recd.* 29/12/26.)

WEIMARN, PETR PETROVIČ VON. Die Allgemeinheit des Kolloidzustandes: kolloides und kristalloides Lösen und Niederschlagen. Translated from the Russian by S. F. SLOKASOW. 2nd edition. Edited by ALFRED KUHN. Vol. I. Dresden 1925. pp. xvi + 506. ill. *M.* 27. (*Recd.* 18/12/26.)

III. *Pamphlets.*

GUILD, JOHN. A trichromatic colorimeter suitable for standardisation work. (From the *Trans. Optical Soc.*, 1925–6, **27**.) ill.

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 29. The pressure wave sent out by an explosive. Part II. By WILLIAM PAYMAN and W. C. F. SHEPHERD. London 1926. pp. 28. ill.

NIELSEN, ROGER. The Emil Christian Hansen Memorial erected in Ribe by the Alumni Association of the Wahl-Henius Institute, Chicago. Copenhagen [1926]. pp. 30.

PENFOLD, ARTHUR RAMON. Some industrial uses of the oil of Eucalyptus phellandra. (*Sydney Technological Museum Bulletin*, No. 11.) 1926. pp. 6.

ROTH, GEORGE B. A consideration of arsphenamine and certain other organic arsenic compounds used in the treatment of syphilis. (From the *U.S. Public Health Reports*, 1921, **36**.)

—— Keeping qualities of market samples of neoarsphenamine while in ampule. (From the *U.S. Public Health Reports*, 1921, **36**.)

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. Report of test on the "fusion" rotary retort installed at the works of Electrobleach and By-products, Ltd. London 1926. pp. vi + 21. ill.

—— The anodic oxidation of aluminium and its alloys as a protection against corrosion. London 1926. pp. iv + 40. ill.

—— Second Report of the Gas Cylinders Research Committee. (Periodical heat treatment.) London 1926. pp. iv + 29 + 13 plates.

—— *Building Research.* Technical Paper No. 3. The permeability of Portland cement concrete. By W. H. GLANVILLE. London 1926. pp. vi + 50. ill.

—— —— Technical Paper No. 4. The determination of free lime in hydraulic cement. By FRANK LAWRENCE BRADY and FRANCIS JOHN MCCONNELL. London 1926. pp. iv + 13.

—— —— Technical Paper No. 5. The consistence of cement pastes, mortars, and concrete. By N. DAVEY. London 1926. pp. viii + 54. ill.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, February 3rd, 1927, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Charles E. Beadnell	Feb. 7th, 1861.	Jan. 26th.
John Webster	May 6th, 1909.	Jan. 20th.

Neilson Brown and R. W. Morris were formally admitted Fellows of the Chemical Society.

Certificates were read for the first time in favour of:

David Henry Burton, B.Sc., A.R.C.S., A.I.C., 49, Rayleigh Road, Wimbledon, S.W. 19.

Edwin Herbert Bunce, A.I.C., 37, Northcote Road, Walthamstow, E. 17.

Edgar Dawn Copley, B.A., B.Sc., 36, Lee Terrace, Blackheath, S.E. 3.

John Gurney, B.A., Walsingham Abbey, Norfolk.

Leonard Joseph Hooley, B.A., A.I.C., 11, Newhouse Road, Grangemouth.

George Robert Howard, B.Sc., 32, Gilpin Street, Peterborough.

Arthur William Knapp, B.Sc., F.I.C., Trinidad, Pine Apple Rd., King's Heath, Birmingham.

Herbert Joseph Millward, Ivydene, Gravelly Lane, Erdington, Birmingham.

Otto Leslie Shaw, Betula, Park View Road, New Eltham, S.E. 9.

Allan George Tyler, B.Sc., 48, Bentley Street, Lockwood, Huddersfield.

Albert Denny Usher, B.Sc., 106, Bolingbroke Grove, S.W. 11.

The following papers were read:

"The nature of the alternating effect in carbon chains. Part XIV. The directive action of some groups of the form –CR′R″·CO·R· in aromatic substitution." By J. W. BAKER and C. K. INGOLD.

"The nature of the alternating effect in carbon chains. Part XVII. The directive action of the groups $\cdot CH_2 \cdot CH_2 \cdot NO_2$, $\cdot CH{:}CH \cdot NO_2$, and $\cdot C(NO_2){:}CHR$ in aromatic substitution." By J. W. BAKER and I. S. WILSON.

"The Storch equation, a general dilution formula, and the validity of the law of mass action at limiting dilutions." By A. FERGUSON and I. VOGEL.

"The calculation of the equivalent conductivity of aqueous solutions of strong electrolytes at infinite dilution. Part II. Application to data at 0°, 18°, and 25° C." By A. FERGUSON and I. VOGEL.

"The calculation of the equivalent conductivity of aqueous solutions of strong electrolytes at infinite dilution. Part III. The mobilities of the hydrogen and the hydroxyl ions." By A. FERGUSON and I. VOGEL.

Meeting held in the Lecture Hall of the Institution of Mechanical Engineers, Storey's Gate, S.W. 1, on Thursday, February 10th, 1927, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair.

Professor Dr. Ernst Cohen delivered the Kamerlingh-Onnes Memorial Lecture. A vote of thanks to the Lecturer, proposed by Professor F. G. Donnan, F.R.S., and seconded by Sir James Walker, F.R.S., was carried with acclamation, Professor Dr. Cohen making acknowledgment.

Ordinary Scientific Meeting, Thursday, February 17th, 1927, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair.

Certificates were read for the first time in favour of:

Charles McKenley Cameron, 146, Whalley Road, Clayton-le-Moors, Accrington.
Richard Chadwick, B.A., 101, Whitefriar's Avenue, Wealdstone.
Ronald Kington Christy, B.Sc., 3, Crieff Road, Wandsworth, S.W. 18.
William Herbert Hatfield, D.Met., Muswell Lodge, Brincliffe Crescent, Sheffield.
James Hutchison McGregor, A.I.C., Avenue Cottage, Alexandria, Dumbartonshire.
Tarak Nath Majumdar, 11, Belvedere Road, Calcutta, India.
Dorothy May Lyddon Rippon, B.A., Springfield House, Abingdon, Berks.
Carl Rowen Ward, B.A., Woodcroft, Newburn, Northumberland.
Charles Barnett Wingfield, 36, Clarendon Gardens, Wembley.

Dr. A. D. Mitchell and Mr. H. Paget were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows:

Cameron Gordon Anderson, B.Sc.
Gilbert Edward Archey, M.A.
Eric Sidney Bacon, B.Sc., A.I.C.
Marie Bagnall, M.Sc.
Mollie Barr.
Bertie Kennedy Blount.
Edmond Johnson Boake, B.A.
Sydney Thomas Bowden, B.Sc., A.I.C.
George Richard Butterfield.
Satyendra Nath Chakravarti, M.Sc.
Cecil Chilvers, B.Sc., A.I.C.
Robert Edward David Clark.
John Stanley Davies, B.Sc.
Bhimbhai Nichhabhai Desai.
Lena Winifred Frost, B.Sc.
Henry Frank Gillbe, B.Sc., A.I.C.
Kirpal Singh Santosh Gujral, B.Sc., LL.B.
Clarence A. Hall.

Cecil Edward Gadwin Harris.
William Honneyman, B.Sc., F.I.C.
Hubert Ivor Hughes, B.Sc.
Alfred Dudley Husband, A.I.C.
Peter Jayaweera Jayaratne, B.Sc.
Arthur Frederick Jones, B.Sc.
Brynmor Jones, B.Sc.
David Idris Jones, B.Sc.
Sin-Iti Kawai.
Alexander Anderson Kennedy.
Alfred William Keyes.
Ernest Leese.
Alkin Lewis, B.Sc., A.I.C.
Reginald Patrick Linstead, Ph.D., D.I.C.
Edward Hubert Lockton, B.Sc., A.R.C.S.
Charles William Long, B.Sc.
Daniel Donald Moir, B.Sc.
Ganesh Chandra Moitra, B.Sc.
Rt. Hon. Sir Alfred Moritz Mond, Bart., M.P.
Matthew Morris.
Masuo Murakami, M.Sc.
Roger Saxon Nickalls.
Shintaro Ogawa.
Mary Alice Marcia Penrose, B.Sc.
Eric Charles Pickering, Ph.D., B.Sc., A.I.C.
Stanley Ernest Pusey.
Mysore Guru Srinivasa Rao.
Alfred Leonard Read, B.Sc.
Alexander Robertson, M.A., B.Sc., Ph.D.
Sydney William Rowell, B.A.
Bernard Charles Saunders, B.A.
Maurice Schofield, B.A., B.Sc.
Robert Kenworthy Schofield, M.A., Ph.D.
Florence Ruth Shaw, B.Sc.
Rodney Thomas Shepherd, B.A.
Isaac Silberman.
Walter Lewis Lee Smith, B.Sc., A.I.C.
Percy Henry Snow.
Kenneth Spedding.
Ronald Speight.
Robert Spencè, B.Sc.
Allan Ramsay Stark, B.Sc., A.I.C.
Alfred Raymond Steele, B.Sc.
Mary Elizabeth Stevens.
Frederick Robert Storrie, B.Sc., A.I.C.
Charles William Herbert Story, M.Sc.Tech.
Richard Arthur Beater Tapley, B.A., B.Sc.
Arthur Turner, B.Sc., A.I.C.
Cyril Joseph Virden, B.A.
Robert Bruce Walker, M.A.
Gilbert Oakley Ward, A.B.
Francis John Watson, M.A., M.Sc.
Albert Greville White, B.Sc., A.I.C.
Edmund White.
Robert Scott Wishart, M.A., D.Sc.
Norman Edward Wood, B.Sc.
Lakshmi Narayan Yadava, M.Sc.
Ryo Yamamoto.

The following papers were read:

"The mechanism of the reaction between a carboxylic ester and a Grignard reagent." By D. R. Boyd and H. H. Hatt.

"The production of fog in the neutralisation of alkali with hydrogen halides." By H. O. Askew.

"Constituents of *Myopurum laetum*, Forst. (the "Ngaio"). Part II. Hydrogenation of ngaione and ngaiol, and dehydration of ngaiol." By F. H. McDowall.

ANNUAL GENERAL MEETING

The Annual General Meeting will take place on Thursday, March 24th, 1927, at 4 p.m., when the President, Professor H. Brereton Baker, C.B.E., D.Sc., F.R.S., will deliver his address.

ANNIVERSARY DINNER.

The Anniversary Dinner of the Society will be held at the Hotel Victoria, King Edward VIIth Rooms, Northumberland Avenue, W.C. 2, on Thursday, March 24th, 1927 (the day of the Annual General Meeting), at Seven for Half-past Seven o'clock.

The Presidents of the Belgian, Dutch, French, German, and Italian Chemical Societies have been invited by the Council to the Dinner, and it is hoped that there will be a large and representative gather of Fellows present.

Tickets, price Twelve Shillings and Sixpence (12*s.* 6*d.*) each, including gratuities to waiters, can be obtained from the Assistant Secretary, Chemical Society, Burlington House, Piccadilly, W. 1. A remittance for the number of tickets required, made payable to S. E. Carr, must accompany each application.

LIST OF FELLOWS, 1927.

It has been decided to print the List of Fellows for 1927 and to supply the List to those Fellows who make application to the Assistant Secretary by July 31st, 1927.

List of Papers, or Abstracts thereof, received between January 20th and February 3rd, 1927. (This List does not include the titles of papers, or abstracts thereof, which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"The constituents of the cell-wall of the flax fibre." By A. E. Cashmore.

"Heterocyclic organic compounds of arsenic. Part I. The action of chloroacetamide on 3 : 4-diaminophenylarsinic acid." By A. J. Ewins, G. Newbery, and R. W. E. Stickings.

"The constitution of the disaccharides. Part XII. Lactose." By W. N. Haworth and C. W. Long.

"The labile nature of the halogen atom in organic compounds. Part XIII." By H. Graham, A. K. Macbeth, and W. B. Orr.

"Derivatives of 2-phenyl-1 : 3-benzdithiole." By W. R. H. Hurtley and S. Smiles.

"The molecular conductivity of cadmium iodide in acetonitrile." By F. K. V. Koch.

"The influence of groups and associated rings on the stability of certain heterocyclic ring systems. Part I. The substituted glutarimides." By S. S. G. Sircar.

"Apparatus for the determination of viscosities under various conditions, and discussion of the errors due to velocity changes in the moving liquid, surface tension, and air-buoyancy." By E. Masters and A. E. Goddard.

"Studies of aromatic thionyl and chlorothionyl derivatives. Part II. 1 : 2-Thionyldihydroxyanthracene and 2 : 3-thionyldihydroxyanthracene." By A. GREEN.

The properties of conjugated compounds. Part II. Addition to butadiene esters." By E. H. FARMER and A. T. HEALEY.

A note on the properties of malonic anhydride (carbon suboxide) C_3O_2." By M. J. EDWARDS and J. M. WILLIAMS.

"A new synthesis of oxyberberine and a synthesis of palmatine." By R. D. HAWORTH, J. B. KOEPFLI, and W. H. PERKIN.

"Melezitose and turanose." By G. C. LEITCH.

"Note on the preparation of 2-methylacenaphthpyridine." By J. STEWART.

"Reduction of nitroaromatic compounds by sugars: constitution of azoxy- and azo-compounds." By T. C. CHAUDHURI.

"Studies of electrolytic polarisation. Part VI. Electro-deposition potentials of alloys of zinc with iron, cobalt, and nickel." By S. GLASSTONE.

"The stereochemistry of the hydronaphthalenes. Part II. Decahydro-β-naphthoic acid and its optical resolution." By B. BEILENSOHN and F. W. KAY.

"The isomerism of the oximes. Part XXIX. Isomeric *p*-nitrobenzyl- and methyl-ethers of some aldoximes." By O. L. BRADY and L. KLEIN.

"The decomposition of carbon monoxide in the corona due to alternating electric fields. Part II." By R. W. LUNT and R. VENKATESWARAN.

"The properties of the chlorides of sulphur. Part I. Freezing points." By T. M. LOWRY, L. P. MCHATTON, and G. G. JONES.

"The vapour pressure of intensively-dried nitrogen tetroxide." By J. W. SMITH.

"The action of nitric acid on unsaturated hydrocarbons. The action of nitric acid on acetylene and ethylene." By P. V. MCKIE.

"Molybdenyl salts and the co-ordination number of oxygen." By W. WARDLAW and R. L. WORMELL.

"The isomerism of the oximes. Part XXX. The preparation of *o*-methoxybenzaldoxime from bisnitrosyl-*o*-methoxybenzyl." By O. L. BRADY and C. L. BENNETT.

"Studies in polymerisation. Part I. 2 : 3 : 4-Trimethyl-*l*-arabonolactone." By H. D. K. DREW and W. N. HAWORTH.

"On the photobromination of *cyclo*hexane." By B. J. WOOD and E. K. RIDEAL.

"A method for the determination of total carbon in the soil solution." By C. F. FLINT.

"A method for the determination of carbon dioxide in the soil solution." By C. F. FLINT.

"1-Methoxy-1'-carboxy-diphenyl and its demethylation with thionyl chloride." By H. G. RULE and E. BRETSCHER.

"Optical activity and the polarity of substituent groups. Part VII. *sec.*-β-Octyl hydrogen terephthalate and the isomeric *sec.*-β-octyl chlorobenzoates." By H. G. RULE, T. R. PATERSON, and A. H. NUMBERS.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ASSOCIATION OF BRITISH CHEMICAL MANUFACTURERS. British Chemicals, their manufacture and uses: being the official directory of the Association of British Chemical Manufacturers. London 1927. pp. 242. (*Reference.*) 10*s.* 6*d.* net.

From the Publishers: Messrs. Ernest Benn.

CRAMER, MARC. Les sucres et leurs dérivés. Paris 1927. pp. xiv + 354. ill. 28 *fr.* (*Recd.* 9/2/27.)

From the Publishers: MM. Gaston Doin et Cie.

DEWAR, SIR JAMES. Collected papers. Edited by LADY DEWAR [and others]. With two supplementary papers not heretofore published. 2 vols. Cambridge 1927. pp. xxii + 674, x, 675 to 1490. ill. 84*s.* net. (*Recd.* 21/2/27.) From Lady Dewar.

DOOTSON, FREDERICK WILLIAM, and BERRY, ARTHUR JOHN. First principles of chemistry. Cambridge 1927. pp. viii + 340. ill. 6*s.* net. (*Recd.* 26/1/27.)

From the Syndics of the Cambridge University Press.

GROSSFELD, JOHANN. Anleitung zur Untersuchung der Lebensmittel. Berlin 1927. pp. xii + 410. ill. *M.* 22·50. (*Recd.* 9/2/27.) From the Publisher: Herr Julius Springer.

INSTITUT INTERNATIONAL DE CHIMIE SOLVAY. Deuxieme Conseil de Chimie tenu a Bruxelles du 16 au 24 Avril 1925. Structure et activité chimiques. Rapports et discussions. Paris 1926. pp. xiv + 672. ill. (*Reference.*) 96 *fr.* From Mr. J. Pryce Jones.

MACLEAN, HUGH, and MACLEAN, IDA SMEDLEY. Lecithin and allied substances. The lipins. [2nd] edition. London 1927. pp. viii + 220. 10*s.* 6*d.* net. (*Recd.* 9/2/27.)

From the Publishers: Messrs. Longmans, Green & Co.

MENDELÉEFF, DMITRI IVANOVICH. The law of periodicity. (Classics of Natural Science, Vol. 15.) Moscow 1926. pp. viii + 256. ill. [In Russian.] (*Recd.* 6/1/27.)

From Professor B. N. Menschutkin.

MENSCHUTKIN, BORIS NIKOLAEVITSCH. Carbocyclic compounds Leningrad 1926. pp. viii + 388. [In Russian.] (*Recd.* 6/1/27.)
From the Author.

ODDO, GIUSEPPE. Trattato di chimica inorganica. Palermo 1925. pp. xvi + 868. ill. *L.* 75. (*Recd.* 18/1/27.)
From the Author.

SÃO PAULO. *Faculdade de Medicina.* Annaes. Vol. I. São Paulo 1926. pp. xx + 384. ill. (*Reference.*)
From the Faculty.

SOCIETY OF PUBLIC ANALYSTS AND OTHER ANALYTICAL CHEMISTS. Decennial Index to The Analyst. Vols. XLI–L (1916–1925). Compiled by M. B. ELLIOTT. Cambridge [1926]. pp. 354. (*Reference.*)
From the Council.

II. *By Purchase.*

CELLULOSECHEMIE. Wissenschaftliche Beiblätter zu der Zeitschrift "Der Papier-Fabrikant." Year VII, etc. Berlin 1926 +. (*Reference.*)

CHIMIE ET INDUSTRIE. Dix ans d'efforts scientifiques et industriels. 1914–1924. 2 vols. Paris [1926]. pp. xxxii + 1552, vi + 1508. ill. (*Reference.*)

DOYLE, AIDA M. [Editor.] Digest of patents relating to coal-tar dyes and allied compounds. United States patents issued prior to January 1, 1924. Easton, Pa. 1926. pp. viii + 586. (*Reference*). 90*s.* net.

FISCHER, JOSEPH. Die Zerstäubungserscheinungen bei Metallen unter besonderer Berücksichtigung der mechanisch-thermischen Zerstäubung und der elektrischen Stoffverdampfung. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XIX.) Berlin 1927.

GARROD, ARCHIBALD EDWARD. Inborn errors of metabolism. 2nd edition. London 1923. pp. viii + 216. 7*s.* 6*d.* net. (*Recd.* 28/1/27.)

GATTERMANN, LUDWIG. Die Praxis der organischen Chemikers. 20th edition. Edited by HEINRICH WIELAND. Berlin 1927. pp. xii + 382. ill. *M.* 15. (*Recd.* 5/2/27.)

HAWK, PHILIP BOUVIER, and BERGEIM, OLAF. Practical physiological chemistry. 9th edition. Philadelphia 1926. pp. xviii + 932. ill. 28*s.* net. (*Recd.* 28/1/27.)

KAYE, GEORGE WILLIAM CLARKSON. High vacua. London 1927. pp. xii + 176. ill. 10*s.* 6*d.* net. (*Recd.* 28/1/27.)

KOLLOIDCHEMISCHE TECHNOLOGIE. Ein Handbuch kolloidchemischer Betrachtungsweise in der chemischen Industrie und Technik. Edited by RAPHAEL ED. LIESEGANG. Parts I–VI. Dresden 1926–27. *M.* 5 per part. (*Recd.* 10/2/27.)

MICHAELIS, LEONOR. Hydrogen ion concentration: its significance in the biological sciences and methods for its determinations. Vol. I. Authorised translation from the 2nd . . . German edition. By WILLIAM A. PERLZWEIG. Baltimore 1926. pp. xiv + 300. ill. 22*s*. 6*d*. net. (*Recd.* 1/2/27.)

OSTWALD, WILHELM. Lebenslinien: eine Selbstbiographie. Vols. I and II. Berlin 1926–7. pp. viii + 268, xii + 446. ill. *M*. 17·50. (*Recd.* 10/2/27.)

RIDEAL, ERIC KEIGHTLEY, and TAYLOR, HUGH STOTT. Catalysis in theory and practice. [2nd edition.] London 1926. pp. xvi + 516. ill. 20*s*. net. (*Recd.* 1/2/27.)

SCHULTZ, GUSTAV. Die Chemie des Steinkohlenteers mit besonderer Berücksichtigung der künstlichen organischen Farbstoffe. 4th edition. Vol. I. Edited by ERWIN FERBER. Brauhschweig 1926. pp. viii + 568. ill. *M*. 42·50. (*Recd.* 10/2/27.)

STAIN TECHNOLOGY. Published by the COMMISSION ON STANDARDISATION OF BIOLOGICAL STAINS. Vol. I, etc. Geneva, N.Y. 1926 +. (*Reference.*)

TAGUE, EDGAR L. Casein: its preparation, chemistry, and technical utilization. [New York] 1926. pp. vi + 218. ill. 17*s*. net. (*Recd.* 28/1/27.)

WAITE, ARTHUR EDWARD. The secret tradition in alchemy: its development and records. London 1926. pp. xxii + 416. 15*s*. net. (*Recd.* 28/1/27.)

WAKSMAN, SELMAN A., and DAVISON, WILBURT C. Enzymes: properties, distribution, methods, and applications. [Baltimore, Md.] 1926. pp. xiv + 364. ill. 25*s*. net. (*Recd.* 28/1/27.)

III. *Pamphlets.*

DEY, BIMAN BIHARI. Presidential address. (From the *Proc. 13th Indian Science Congress, Section of Chemistry.*) 1926.

DONALD, ROBERT. A Wassermann micro-technique needing only occasional titration of the complement. (From the *Brit. J. Derm. Syphilis*, 1923, **35**.)

GIMINGHAM, CONRAD THEODORE, MASSEE, A. M., and TATTERSFIELD, FREDERICK. A quantitative examination of the toxicity of 3 : 5-dinitro-*o*-cresol and other compounds to insect eggs, under laboratory and field conditions. (From the *Ann. Applied Biol.*, 1926, **13**.)

GOVERNMENT LABORATORY. Report of the Government Chemist . . . for the year ending 31st March, 1926, etc. London 1926 +.

INTERNATIONAL CONFERENCE ON THE BIOLOGICAL STANDARDIZATION OF CERTAIN REMEDIES, Second. (From the *U.S. Public Health Reports*, 1926, **41**.)

CHNOLOGY DEPT.
APR 11 1927
DETROIT

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, March 3rd, 1927, at 8 p.m., Professor H. Brereton Baker, C.B.E., D.Sc., F.R.S., President, in the Chair.

The President referred to the loss sustained by the Society, through death on February 17th, of Mr. Montague Williams, who was elected a Fellow on February 15th, 1923.

The following list of nominations for vacant places on the Council was read from the Chair :

Vice-President who has filled the office of President (one vacancy) : Harold B. Dixon.

Vice-Presidents who have not filled the office of President (two vacancies) :

G. G. Henderson and Arthur Smithells.

Ordinary Members of Council :

(*a*) Town Members, *i.e.*, those resident within 50 miles of Charing Cross (three vacancies) :

E. R. Bolton, J. C. Drummond, and J. F. Spencer.

(*b*) Country Members, *i.e.*, those resident beyond 50 miles from Charing Cross (three vacancies) :

M. P. Applebey, J. E. Coates, and E. K. Rideal.

The following were formally admitted Fellows of the Chemical Society : R. T. Shepherd, G. B. Scott, F. J. Watson, N. E. Wood.

Certificates were read for the first time in favour of :

Robert Andrew, Old Park Road, Belfast.
William Barklamb, 48, Brookmill Road, Deptford, S.E. 13.
Fritz Alfred Bate, B.Sc., 50, Eastwood Lane, Westcliff-on-Sea.
William Bradley, M.Sc., 130, New Bold Street, Leigh, Lancs.
Charles Forrester, F.I.C., Indian School of Mines, Dhanbad, India.
Gerald Charles Leake Griffin, Ministry of Labour, Whitehall, S.W. 1.
James Charles Harral, 201, Bradford Road, Batley.
Norman Holt Hartshorne, M.Sc., A.I.C., 40, Druslyn Road, West Cross, Swansea.
Jason Louis Edward Lewkowitsch, A.R.C.S., 71, Priory Road, N.W. 6.
Ernest Matthews, M.Sc., A.R.C.S., 44, Badminton Road, Balham, S.W. 12.
John Tomlinson, B.Sc.Tech., 33, Windsor Road, Levenshulme, Manchester.

The following papers were read :

"The decomposition of carbon monoxide in the corona due to alternating electric fields. Part II." By R. W. LUNT and R. VENKATESWARAN.

"The properties of the chlorides of sulphur. Part I. Freezing-points." By T. M. LOWRY, L. P. MCHATTON, and G. G. JONES.

Ordinary Scientific Meeting, Thursday, March 17th, 1927, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
Arthur William Crossley	Dec. 4th, 1890.	Mar. 5th, 1927.
James Alfred Kendall	Dec. 17th, 1874.	Mar. 1st, 1927.
Edmund Felix Mondy	Dec. 17th, 1879.	April 20th, 1926.
Ira Remsen (Honorary Fellow)	Jan. 20th, 1898.	Mar. 1927.

and stated that the following resolution had been passed at the Council Meeting held that afternoon :

> The Council desires to express, on behalf of the general body of Fellows, its deep sorrow and sense of loss in the death of Dr. Arthur W. Crossley. Since his election 36 years ago, Dr. Crossley has served on the Council for a period of 23 years, filling with conspicuous zeal and ability the offices of Secretary, Foreign Secretary, and President.
>
> In offering to Mrs. Crossley its sincere sympathy in her great loss, the Council desires to record its high appreciation of the distinguished services rendered by Dr. Crossley not only to the Society, but to the science of Chemistry and its application to industry.

The company present expressed their concurrence in this resolution by rising from their places. The Society was represented at the funeral on March 9th by Professor H. B. Dixon, other present and past members of Council, and the Assistant Secretary.

The PRESIDENT announced that in accordance with Bye-Law II, Professor Dr. Richard Willstätter, of Munich, was proposed by the Council as an Honorary Fellow of the Society, and that a ballot for his election would be held at the next Ordinary Scientific Meeting on April 7th.

Certificates were read for the first time in favour of:

Keith Lester Beak, 25, Chadwick Road, Leytonstone, E. 11.
Thomas Eric Ellison, 22, Kelvin Parade, Belfast.
Thomas Alfred Jenkinson, B.Sc., 5, Glebe Street, Marsh, Huddersfield.
Louis Arnold Jordan, D.Sc., A.R.C.S., F.I.C., 14, Parklands, Surbiton.
Alfred William Mond, B.A., 104, Eaton Place, S.W. 1.
John Hopkinson Parker, 57, Grafton Road, Keighley.
Arthur Shortt, B.Sc., St. Andrews, Clayton Road, Newcastle-on-Tyne.
Robert Louis Wormell, Coniston, Stoke Park, Coventry.

The following papers were read:

"Tetrachloro-(triaminopropane-γ-monohydrochloride)-platinum, a new type of optically active complex salt." By F. G. MANN.

"The activation of wood charcoal by progressive oxidation in relation to bulk density and iodine adsorption." By A. B. P. PAGE.

"The parachor and chemical constitution. Part V. Evidence for the existence of singlet linkages in the pentachlorides of phosphorus and antimony." By S. SUGDEN.

LIST OF FELLOWS, 1927.

It has been decided to print the List of Fellows for 1927 and to supply the List to those Fellows who make application to the Assistant Secretary by July 31st, 1927.

List of Papers, or Abstracts thereof, received between February 17th and March 17th, 1927. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Acid and salt effects in catalysed reactions. Part VII. The tridimensional co-ordination of catalytic variables. Relations between the data for pure acids and the corresponding minimum velocity mixtures." By H. M. DAWSON.

"The gelatin precipitation test for tannins." By A. E. JONES.

"The solubility of potassium ferrocyanide in water at temperatures up to 25° C." By R. H. VALLANCE.

"Reactions of incandescent tungsten with nitrogen and with water vapour." By C. J. SMITHELLS and H. P. ROOKSBY.

"The nature of the alternating effect in carbon chains. Part XVIII. Mechanism of exhaustive methylation and its relation to anomalous hydrolysis." By W. HANHART and C. K. INGOLD.

"The constitution of certain salts and acids in solution by observations of critical solution temperatures." By S. R. CARTER and N. J. L. MEGSON.

"A micro-method for the estimation of nitrate in soil solutions and extracts." By C. F. FLINT.

"The determination of carbonyl in aldehydes and ketones." By G. W. ELLIS.

"A note on the Schwartzchild law with reference to photographic spectrophotometry." By F. SIMEON.

"New fluorides of selenium." By E. B. R. PRIDEAUX and C. B. COX.

"Investigations in the diphenyl series. Part V. Derivatives of 4-aminodiphenyl and diphenic acid." By F. BELL and P. H. ROBINSON.

"αβ-Dichloro β-bromovinyl ethyl ether." By I. A. SMITH.

"Studies of precipitated solids (especially $SrSO_4$ and $CaSO_4$)." By P. P. VON WEIMARN.

"The optically active diphenylhydroxyethylamines and *iso*hydrobenzoins. Part I." By J. READ and C. C. STEELE.

"Higher substitution products of 4-aminodiphenyl." By H. A. SCARBOROUGH and W. A. WATERS.

"The iodination of *o*-nitrophenol." By H. H. HODGSON.

"The interaction of ethyl acetoacetate with distyryl ketones. Part III. *ortho*Hydroxychlorodistyryl ketones." By I. M. HEILBRON and R. HILL.

"Jackson and White's synthesis of phenanthrene." By J. KENNER and J. WILSON.

"The basic character of the acetxylides and its influence on the course of their substitution." By H. E. DADSWELL and J. KENNER.

"The dicarbazyls. Part II. 9 : 9′-Dicarbazyl and its halogen derivatives." By J. MCLINTOCK and S. H. TUCKER.

"The influence of groups and associated rings on the stability of certain heterocyclic ring systems. Part II. The substituted succinimides." By S. S. G. SIRCAR.

"The influence of groups and associated rings on the stability of certain heterocyclic ring systems. Part III. Substituted paraconic acids." By S. S. G. SIRCAR.

"The interaction of alkali sulphites with some halogeno-compounds, and the optical resolution of α-phenylpropanesulphonic acid." By E. B. EVANS, E. E. MABBOTT, and E. E. TURNER.

"The periodic electro-deposition of metals through secondary reaction." By E. S. HEDGES.

"Piperidine as a general reagent for the determination of con-

stitution of halogeno-nitro-compounds. The nitration of 4 : 4′-dihalogeno-diphenylmethane and *s*-diphenylethane." By R. J. W. LE FÈVRE and E. E. TURNER.

"The laws of sympathetic vibrations. Unisons and octaves." By A. T. S. CLARK.

"Some experiments with 1 : 8-naphthalyl chloride." By W. DAVIES and G. W. LEEPER.

"The disulphonation of *m*-dichlorobenzene and of *s*-trichlorobenzene." By W. DAVIES and H. G. POOLE.

"The recovery of pinene from its nitrosochloride." By J. C. EARL and J. KENNER.

"Researches on residual affinity and co-ordination. Part XXIX. Cupric salts stabilised by ethylenediamine." By G. T. MORGAN and F. H. BURSTALL.

"The purification of acetic acid. The estimation of acetic anhydride in acetic acid." By K. J. P. ORTON and A. E. BRADFIELD.

"The chlorination of anilides. The directing influence of the acylamino-group." By K. J. P. ORTON and A. E. BRADFIELD.

"The constitution of sulphur dioxide in solution. Part I. The influence of hydrochloric acid on the distribution ratio of sulphur dioxide." By S. R. CARTER and A. E. T. NEALE.

"The constitution of sulphur dioxide in solution. Part II. The influence of temperature on the distribution ratio of sulphur dioxide." By S. R. CARTER and A. E. T. NEALE.

"The solubility of sulphur dioxide in water, chloroform, and westron." By S. R. CARTER and A. E. T. NEALE.

"Acid and salt effects in catalysed reactions. Part VIII. The determination of hydrolytic velocity coefficients from *iso*-catalytic data. Reaction velocities in buffer solutions and compound catalytic catenaries." By H. M. DAWSON.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, MAY 5TH, 1927.

ANDREW, ROBERT, Old Park Road, Belfast. British. Pharmaceutical Chemist. Member of the Pharmaceutical Society of Northern Ireland. Licentiate of the Pharmaceutical Society, Irish Free State. No published communications. Interest in current advances in chemistry, particularly in relation to pharmacy and medicine. (*Signed by*) Theo. Harper, James Dundee, D. Hughes, P. J. Thompson, D. P. Woosley.

BARKLAMB, WILLIAM, 48, Brookmill Road, Deptford, S.E. 13. English. Asst. Chemist. Student at the Sir John Cass Technical Institute (Adv.

Organic Chem.). Wish to keep in touch with the latest advances in Chemistry and would appreciate the use of the Library. (*Signed by*) E. de Barry Barnett, W. V. Lloyd, J. L. Wiltshire.

BATE, FRITZ ALFRED, 50, Eastwood Lane, Westcliff-on-Sea, Essex. British. Student. B.Sc., 2nd Hons., London. 4 Years East London College. 1 Year research, Battersea Polytechnic. (*Signed by*) J. Kenyon, F. Bell, Henry Phillips.

BEAK, KEITH LESTER, 25, Chadwick Road, Leytonstone, E. 11. British. Assistant in Engineer-in-Chief's G.P.O. Test Section, Chemical Dept., Studd St., N. 1. (*Signed by*) Bernard W. Crutchlow, W. Williamson, A. H. Durrant.

BRADLEY, WILLIAM, 130, New Bold Street, Leigh, Lancs. British. Research Student. Graduated 1924. B.Sc. (Hons.), University of Manchester. M.Sc. Degree, 1925, University of Manchester. "Hydrolytic Fission of some Substituted Dibenzoylmethanes," *J.C.S.*, 1926, 2356. (*Signed by*) Robert Robinson, Arthur Lapworth, Frederick Challenger.

BUNCE, EDWIN HERBERT, 37, Northcote Road, Walthamstow, Essex. British. Works Chemist to Grays, Colors, & Dyes, Ltd. A.I.C. Formerly for 5 years in the laboratory of Dr. Bernard Dyer. (*Signed by*) Bernard Dyer, George Senter, George Taylor, F. J. Thorneycroft.

BURTON, DAVID HENRY, 49, Rayleigh Road, Wimbledon, S.W. 19. British. Research Assistant. B.Sc. (1st Class Hons., London). A.R.C.S. A.I.C. (*Signed by*) C. S. Gibson, J. Davidson Pratt, M. A. Whiteley.

CAMERON, CHARLES MCKENLEY, 146, Whalley Road, Clayton-le-Moors, Accrington. British. Chemist and Druggist. Member of the Pharmaceutical Society. 1915–1919, Lancashire and Cheshire Institute Course (certificates with honours). 1920–1921, Student, Manchester College of Pharmacy (certificate of proficiency). 1922 onwards, giving instruction to students preparing for the Chemist and Druggist Qualifying Examination, Part I (Chemistry and Physics). Completed the Major Course for the Pharmaceutical Chemists Diploma. Present reading up Metallurgical Chemistry and the Analysis of Food and Drugs. (*Signed by*) H. Brindle, J. W. Bell, Jules Cofman Nicoresti.

CHADWICK, RICHARD, 133, Whitefriar's Avenue, Wealdstone, Middlesex. British. Natural Science Tripos, Part II, Chemistry, 1925, 2nd Class. B.A., Honours, Cambridge, 1925. Research work in Metallurgy under Mr. C. T. Heycock, F.R.S., for 18 months. (*Signed by*) A. J. Berry, Hamilton McCombie, F. W. Dootson.

CHRISTY, RONALD KINGTON, 3, Crieff Road, Wandsworth, S.W. 18. British. University Demonstrator. B.Sc. (Lond.), 2nd Class Honours in Chemistry. Demonstrator in Biochemistry. (*Signed by*) A. J. Allmand, Samuel Smiles, H. Gordon Reeves.

COPLEY, EDGAR DAWN, Bulawayo, S. Rhodesia. British. Works Chemist. Degrees: B.Sc. (South Africa) (Physics and Chemistry). B.A. and B.Sc. (Oxon.) (Chemistry). (*Signed by*) J. L. Wiltshire, M. Farrow, J. K. Marsh, M. P. Applebey, S. G. P. Plant, J. M. Gulland, E. Hope.

ELLISON, THOMAS ERIC, 22, Kelvin Parade, Belfast, N.I. English. University Assistant in Chemistry. Assistant in Chemistry in the Queen's University of Belfast, 1924–1927. (*Signed by*) A. W. Stewart, H. Graham, W. H. Crowe.

FORRESTER, CHARLES, Indian School of Mines, Dhanbad, Bihar and Orissa, India. British. Professor of Chemistry and Assaying, Indian School of Mines, Dhanbad, Bihar and Orissa, India, E.I.R. Associate Heriot-Watt College, Edinburgh. Fellow of the Institute of Chemistry. Several years

Lecturer in Chemistry and Assaying at the Heriot-Watt College, Edinburgh. (*Signed by*) John Dall, J. J. Blackie, Eric Knott.

GRIFFIN, GERALD CHARLES LEAKE, Ministry of Labour, Montagu House, Whitehall, S.W. 1. British. Civil Servant. Foundation Scholarship in Exp. Sc., Trinity College, Dublin. Senior Moderatorship, B.A., Large Gold Medal, Exp. Sc. (Chem. and Phys.), Dublin Univ. I desire to keep in touch with the progress of Chemistry. (*Signed by*) Sydney Young, Emil. A. Werner, Kenneth C. Bailey, A. G. G. Leonard, James Bell.

GURNEY, JOHN, Walsingham Abbey, Norfolk. British. Research Student. Part I, Honour School of Chemistry, Oxford, 1926. (*Signed by*) W. H. Perkin, S. G. P. Plant, J. Masson Gulland.

HARRAL, JAMES CHARLES, 201, Bradford Rd., Batley, Yorks. English. Analytical Chemist (Assistant). With Messrs. F. W. Richardson and A. Jaffé, Public Analysts, etc., Bradford. Over five years' pupilship with Messrs. Richardson and Jaffé, with whom he is now Assistant. (*Signed by*) Frederick William Richardson, Adolph Jaffé, Herbert Hodgson.

HARTSHORNE, NORMAN HOLT, 40, Druslyn Road, West Cross, Swansea. British. Assistant Lecturer in Inorganic and Physical Chemistry, University College, Swansea. Late Demonstrator in Inorganic and Physical Chemistry, Bedford College, University of London. M.Sc. (B'ham.). A.I.C. Published work (in *J.C.S.*): "System Ferric Oxide–Phosphoric Acid–Water," 1923, **123**, 2223; "Apparatus for Viscosimetric Determination of Transition Points," 1924, **125**, 2096; "System Ferrous Oxide–Phosphoric Acid-Water," 1926, 363. (*Signed by*) J. E. Coates, L. E. Hinkel, E. E. Ayling.

HATFIELD, WILLIAM HERBERT, Muswell Lodge, Brincliffe Crescent, Sheffield. British. Principal of the Brown Firth Research Laboratories, Princess St., Sheffield. D.Met. (Sheffield), F.Inst.P. M.Inst.Mech.E. Papers given to Royal Society, Iron and Steel Inst., Inst. of Metals, Inst. Mech. Eng., etc. (*Signed by*) Ulick R. Evans, Cecil H. Desch, W. P. Wynne.

HOOLEY, LEONARD JOSEPH, 11, Newhouse Road, Grangemouth, Stirlingshire. English. Chemist. B.A. (Cantab.). Natural Science Tripos, Part II, Chemistry, 2nd Class, 1920. A.I.C. (*Signed by*) W. J. Pope, W. H. Mills, John Thomas.

HOWARD, GEORGE ROBERT, 32, Gilpin St., Peterborough. British. Teacher of Chemistry (Junior Science Master, Skipton Grammar School). 1st Class Hons. B.Sc. (Honours School of Chemistry, Univ. of Sheffield). Desirous of receiving Journal and keeping in touch with recent research. (*Signed by*) W. P. Wynne, F. G. Tryhorn, G. M. Bennett, Arthur W. Chapman, W. F. Wyatt.

JENKINSON, THOMAS ALFRED, 5, Glebe St., Marsh, Huddersfield. English. Research Student and Part-time Teacher. B.Sc. (London). Diploma in Chemistry, Hudd. Tech. College. Laboratory Assistant at British Dyestuffs Corporation, Ltd., 1918–1921. Day-student at Huddersfield Technical College, 1921–1927. (*Signed by*) Herbert H. Hodgson, L. Gordon Paul, James Bruce.

JORDAN, LOUIS ARNOLD, 14, Parklands, Surbiton. British. Director Paint and Varnish Research Assocn. D.Sc. (London). A.R.C.Sc. (London). D.I.C. F.I.C. *J.C.S.*, 1915, p. 387. (*Signed by*) Jocelyn Thorpe, James C. Philip, H. F. Harwood.

KNAPP, ARTHUR WILLIAM, "Trinidad," Pine Apple Rd., King's Heath, Birmingham. British. Chief Chemist, Messrs. Cadbury Bros., Bournville. B.Sc. (Lond. and Birm.). F.I.C. M.I.Chem.E. Papers in the *Analyst*: 1909, 12; 1910, 385; 1912, 3; 1913, 102; 1919, 2; 1923, 486. Papers in

the *Journal of the Society of Chemical Industry:* Dec. 1910; 1911, 165; 1914, 158; 1915, 1121; 1918, 240T; 1924, 124T and 402R; 1925, 453T; 1926, 123T and 140T. (*Signed by*) Wm. Wardlaw, W. J. Hickinbottom, S. R. Carter, J. D. Main Smith.

LEWKOWITSCH, JASON LOUIS EDWARD, 71, Priory Rd., N.W. 6. British. Student. At present engaged in Physical Chemistry research. A.R.C.S. (*Signed by*) James C. Philip, H. J. T. Ellingham, J. H. G. Carlile.

MCGREGOR, JAMES HUTCHISON, Avenue Cottage, Alexandria, Dumbartonshire. British. Technical Chemist, The United Turkey Red Co., Ltd., Glasgow. Associate of The Royal Technical College, Glasgow (A.R.T.C.). Associate of The Institute of Chemistry (A.I.C.). Formerly Research Chemist with The British Alizarine Co., Ltd., Manchester. (*Signed by*) William M. Cumming, M. M. J. Sutherland, R. M. Caven, John A. Cranston.

MAJUMDAR, TARAK NATH, 11, Belvedere Road, Calcutta. Hindu. Health Officer, Corporation of Calcutta and Professor of Hygiene, Carmichael Medical College, Calcutta. D.P.H. D.T.M. F.R.S.E. Late Asst. Analyst, Corporation of Calcutta, 1908–11. Examiner in Hygiene and Public Health for M.B. Examination, University of Calcutta, 1913–27. Examiner in D.P.H. (Chemistry, Physics), University of Calcutta, 1921–23. Professor of Hygiene, Carmichael Medical College. (*Signed by*) Tin Kari Ghose, Chuni Lal Bose, Beni Madhub Chakravarti.

MATTHEWS, ERNEST, 44, Badminton Rd., Balham, S.W. 12. British. Demonstrator in Chemistry, Medical School, Guy's Hospital. M.Sc. A.R.C.S. D.I.C. *J.C.S.*, 1926, 2270. (*Signed by*) John H. Carlile, A. T. Healey, J. T. Evans.

MILLWARD, HERBERT JOSEPH, "Ivydene," Gravelly Lane, Erdington, Birmingham. British. Lecturer's Assistant, Birmingham University. Senior Laboratory Steward, King Edwards Grammar School, 3 years. Army Dispenser, R.A.M.C. (T.F.), 4 years. Lecturer's Assistant, Birmingham University, 7 years. I am desirous of keeping in touch with Chemical progress. (*Signed by*) W. N. Haworth, S. R. Carter, E. L. Hirst.

MOND, ALFRED WILLIAM, 104, Eaton Place, London, S.W. 1. British. Assistant Works Manager, Brunner, Mond & Co., Ltd., Northwich. B.A., Cambridge. 3 Years' research at Oxford. (*Signed by*) F. A. Freeth, F. G. Donnan, N. V. Sidgwick.

PARKER, JOHN HOPKINSON, 57, Grafton Road, Keighley, Yorks. English. Assistant Brewer and Chemist. Studied Chemistry under Mr. H. Harper, B.Sc., A.R.C.Sc., A.I.C., F.C.S.; Mr. L. M. Stockdale, B.Sc., M.Sc., F.C.S., and Mr. J. Ross-Mackenzie, F.C.S., F.R.M.S., and am desirous of receiving the publications of the Society. (*Signed by*) Herbert Hobson, Harry Harper, Leonard M. Stockdale.

RIPPON, DOROTHY MAY LYDDON, Springfield House, Abingdon, Berks. British. Research Student. B.A., Oxon. (Chemistry), Honours. (*Signed by*) W. H. Perkin, S. G. P. Plant, J. M. Gulland, E. Hope.

SHAW, OTTO LESLIE, "Betula," Park View Rd., New Eltham, S.E. 9. English. Analytical Chemist (in the employ of the Shell-Mex Oil Co., Ltd.). Delivered course of lectures on the Growth of Chemistry. (*Signed by*) George Senter, F. J. Thorneycroft, A. M. Ward, Samuel Sugden.

SHORTT, ARTHUR, St. Andrews, Clayton Rd., Newcastle-on-Tyne. British. Industrial Chemist. B.Sc. (Hons.), Durham. Barrister-at-Law. 4½ Years' Research Chemist, United Alkali Co., Ltd. Now Pelaw Main Colliery Co. (*Signed by*) P. Phillips Bedson, J. A. Smythe, P. L. Robinson.

TOMLINSON, JOHN, 33, Windsor Road, Levenshulme, Manchester. British.

Research Student (Geology Department of Manchester University). B.Sc. (Tech.), Honours, Fuel. (*Signed by*) W. H. Brindley, T. K. Walker, John K. Wood.

TYLER, ALLAN GEORGE, 48, Bentley Street, Lockwood, Huddersfield. British. Research Student. Student, Leeds University, 1923–26. Hons. B.Sc., Colour Chemistry, 1926. Draper's Co.'s Research Scholarship, Huddersfield Technical College, 1926–. (*Signed by*) P. K. Dutt, E. Phillis, G. V. Hall.

USHER, ALBERT DENNY, 106, Bolingbroke Grove, S.W. 11. British. Assistant Schoolmaster. B.Sc. (London). Post-graduate Student of Chemistry. Wishing to keep in touch with the progress of the subject. (*Signed by*) J. W. Cook, E. de Barry Barnett, P. C. L. Thorne.

WARD, CARL ROMEN, Woodcroft, Newburn, Northumberland. English. Student (Emmanuel College, Camb.). Intends to be teacher in Chemistry. B.A. (Cambridge). Nat. Science Tripos, Pt. I. At present training for Diploma in Education with Endorsement in Chemistry. (*Signed by*) John S. Bousfield, R. G. W. Norrish, F. W. Dootson.

WINGFIELD, CHARLES BARNETT, 36, Clarendon Gdns., Wembley, Middlesex. British. Senior Asst. Chemist with Messrs. A. Duckham & Co., Ltd., Oil Refiners and Lubricant Manufacturers, 6, Broad Street Place, E.C. 2. Fourteen years' experience of practical laboratory work with the above firm. Associate Member Institution Petroleum Technologists. (*Signed by*) A. Duckham, Robert Redwood, S. Bowrey.

WORMELL, ROBERT LOUIS, "Coniston," Stoke Park, Coventry. English. Research Chemist. Part-time Demonstrator in Chemistry, Birmingham University (1925–27). *J.C.S.*, 1924, **125**, 2370; 1927, 130. (*Signed by*) Wm. Wardlaw, F. W. Pinkard, H. M. Spittle.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ABDERHALDEN, EMIL. Handbuch der biologischen Arbeitsmethoden. Abt XI. Chemische, physikalische und physikalisch-chemische Methoden zur Untersuchung des Bodens und der Pflanze, Teil 3, Heft. v. Berlin 1927. pp. 715 to 864. ill. *M.* 7.20. (*Recd.* 2/3/27.)

From the Publishers: Herren Urban & Schwarzenberg.

AMERICAN MEDICAL ASSOCIATION. Annual Reports of the Chemical Laboratory. Vol. 17–18, 1924–25. Chicago. (*Reference.*) $1.25. From the Laboratory.

INDUSTRIAL CHEMIST and Chemical Manufacturer. Vol. 3, etc. London 1927 +. (*For circulation.*)

From the Society of Dyers and Colourists.

JOURNAL OF POMOLOGY AND HORTICULTURAL SCIENCE. Vol. V, etc. London 1925 +. (*Reference.*)

From the Bureau of Chemical Abstracts.

KUHLMANN. Cent ans d'industrie chimique. Les établissements Kuhlmann 1825–1925. Paris 1926. pp. 138. ill. (*Recd.* 17/2/27.)

From the Director.

NATUURWETENSCHAPPELIJK TIJDSCHRIFT. Tolk van Afdeelingen I en III van het Vlaamsch Natuur- en Geneeskundig Congres. Year VIII, etc. Antwerpen 1926 +. (*Reference.*)

From the Secretary.

SCHIMMEL & Co. Bericht über ätherische Öle, Riechstoffe usw. 12 vols. Miltitz bez. Leipzig 1914–15, 1918–26. (*Reference.*)

—— Semi-annual [later, Annual] report on essential oils, synthetic perfumes, etc. 12 vols. Miltitz near Leipzig 1914–25. (*Reference.*) From Messrs. Schimmel & Co.

VAN NOSTRAND'S Chemical Annual: a handbook of useful data for analytical, manufacturing, and investigating chemists, chemical engineers, and students. Edited by JOHN C. OLSEN and T. R. LE COMPTE. 6th issue, 1926. London 1927. pp. xvi + 882. ill. (*Reference.*) 21*s.* net.

From the Publishers: Messrs. Chapman & Hall.

WEIMARN, PETER PETROVIC VON. Kolloides und Kristalloides Loesen und Niederschlagen. 3 vols. Kyoto 1921. pp. xx + 743 + 108 plates. (*Reference.*)

From the Author, per Dr. William Clayton.

II. *By Purchase.*

ANDRADE, EDWARD NEVILLE DA COSTA. The structure of the atom. 3rd edition. London 1927. pp. xx + 750. ill. 30*s.* net. (*Recd.* 11/3/27.)

AUSTIN, JOSHUA HAROLD, and CULLEN, GLENN E. Hydrogen ion concentration of the blood in health and disease. Baltimore 1926. pp. xii + 75. ill. 9*s.* net. (*Recd.* 11/3/27.)

AUWERS, KARL VON. Über die Bildung von Chinon-imiden und Phenoxazonen aus *o*-Amino-phenolen. Nach Versuchen von E. MÜRBE, K. SAURWEIN, G. DEINES, und J. SCHORNSTEIN. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XVIII.) Berlin 1924.

BEAN, PERCY, and MCCLEARY, WILLIAM. The chemistry and practice of finishing. A practical treatise on bleaching, and the finishing of white, dyed, and printed cotton goods. 3rd edition. 2 vols. Manchester 1926. pp. xxiv + 624, xvi + 396. ill. 60*s.* net. (*Recd.* 11/3/27.)

BEECH, FRANKLIN. The dyeing of cotton fabrics. 3rd edition, revised by ARCHIBALD JOHN HALL. London 1927. pp. xii + 296. ill. 18*s.* net. (Recd. 11/3/27.)

BERL, ERNST, and BRAUNE, A. Über die Darstellung von Natriumcyanid aus Luftstickstoff, Soda, und Kohle. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XVIII.) Berlin 1925.

CLARK, ALFRED JOSEPH. Applied pharmacology. 2nd edition. London 1927. pp. x + 430. ill. 15*s*. net. (*Recd.* 11/3/27.)

CLARK, GEORGE L. Applied *X*-rays. New York 1927. pp. xiv + 256. ill. 20*s*. net. (*Recd.* 11/3/27.)

COMPTON, ARTHUR H. *X*-rays and electrons: an outline of recent *X*-ray theory. New York 1927. pp. xvi + 404. ill. 25*s*. net. (*Recd.* 11/3/27.)

COMPTON, KARL TAYLOR, and MOHLER, FRED L. Ionisierungs- und Anregungsspannungen. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XVIII.) Berlin 1925.

CORSON, M. G. Aluminium: the metal and its alloys (a critical descriptive treatise). Including chapter on "structurography" prepared in co-operation with J. R. VILELLA. New York 1926. pp. xx + 292 + 122 plates. 36*s*. net. (*Recd.* 11/3/27.)

EDER, JOSEF MARIA. Ausführliches Handbuch der Photographie. Vol. II, Part 1. Die Grundlagen der photographischen Negativverfahren. By [HINRICUS] LÜPPO-CRAMER. 3rd edition. Halle (Saale) 1927. pp. x + 814. ill. *M* 41. (*Recd.* 4/3/27.)

EISENLOHR, FRITZ. Der molekulare Brechungskoeffizient in der Reihe der Polymethylenverbindungen. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XVIII.) Berlin 1925.

EWALD, PETER PAUL. Die Reflexion und Brechung des Lichts als Problem der Elektronentheorie. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XVIII.) Berlin 1925.

FIERZ-DAVID, HANS EDUARD. Künstliche organische Farbstoffe. Berlin 1926. pp. xvi + 720. ill. *M*. 63. (*Recd.* 17/2/27.)

FORTSCHRITTE DER CHEMIE, PHYSIK UND PHYSIKALISCHEN CHEMIE. Vol. XVIII, etc. Berlin 1924–26 +. (*Reference.*)

GARLAND, HERBERT, and BANNISTER, CHARLES OLDEN. Ancient Egyptian metallurgy. London 1927. pp. xii + 214. ill. 12*s*. 6*d*. net. (*Recd.* 11/3/27.)

HERZOG, ALOIS. Die Unterscheidung der Flachs- und Hanffaser. Berlin 1926. pp. viii + 110. ill. *M*. 13.20. (*Recd.* 17/2/27.)

HÜTTIG, GUSTAV F. Über Gitterbestandteile, die im Kristallgitter vagabundieren. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XVIII.) Berlin 1924.

JAQUET, EMANUEL. Theorie der Adsorption von Gasen. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XVIII.) Berlin 1925.

RASTALL, ROBERT HERON. Physico-chemical geology. London 1927. pp. viii + 248. ill. 15*s*. net. (*Recd.* 11/3/27.)

SMITH, [ALEXANDER]. Inorganic chemistry. Revised and rewritten by JAMES KENDALL. New York 1926. pp. xxxviii + 1030. ill. 17*s*. 6*d*. net. (*Recd.* 1/3/27.)

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PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

ANNIVERSARY DINNER.

THE Anniversary Dinner of the Chemical Society was held at the Hotel Victoria (King Edward VII Rooms) on Thursday, March 24th, 1927, at 7 for 7.30 p.m., the President, Professor H. B. BAKER, C.B.E., D.Sc., F.R.S., being in the Chair. The following Fellows and Guests were present :—

Applebey, M. P.
Armstrong, H.
Armstrong, Mrs. H.
Armstrong, Miss N.
Austin, P. C.
Baker, Miss A. M.
Baker, H. Brereton, C.B.E., F.R.S., *President.*
Baker, Mrs. H. Brereton.
Baker, S.
Barger, G., F.R.S.
Baron, H.
Baron, Mrs. H.
Bedson, P. P.
Bennett, Miss D. M.
Benton, W. A.
Blackwell, F. V., C.B.E., M.C.
Blair, J. W.
Bolton, E. R., *President, Society of Public Analysts.*
Borns, H.
Bradstreet, H.
Bradstreet, Mrs. H.
Brame, J. S. S.
Bunker, S. W., D.S.O., M.C.
Burton, D. H.
Cain, Miss E.
Cain, Mrs. J. C.
Carlton, Miss M.
Carpmael, A.
Carr, F. H., C.B.E., *President, Society of Chemical Industry.*
Carr, Mrs. F. H.
Carr, S. E., *Assistant Secretary.*
Chapman, A. Chaston, F.R.S.
Chapman, Mrs. A. Chaston.
Chattaway, F. D., F.R.S.
Chemical Age.
Clifford, F. W., *Librarian.*
Coates, J. E., O.B.E.
Colles, W. M.
Colles, Mrs. W. M.
Dickes, Miss W. E.
Donnan, F. G., C.B.E., F.R.S., *Foreign Secretary.*
Druce, J. G. F.
Drummond, J. C.
Dunningham, A. C.
Durrans, T. H.
Durrans, Mrs. T. H.
Dyer, B.
Dyer, Mrs. B.
Eck, J.
Eck, Miss M. E.
Edser, E.
Ehrhardt, E. F.
Ehrhardt, Mrs. E. F.
Eldridge, A. A.
Eldridge, Mrs. A. A.
Ellingham, H. J. T.
Fargher, R. G.
Findlay, A.
Flürscheim, B.
Freeth, F. A., O.B.E., F.R.S.

Gamble, F. W.
Gamble, Mrs. F. W.
Gater, R. E.
Gerrard, W.
Gibb, Sir Alexander, G.B.E., C.B., *President, Institution of Chemical Engineers.*
Gibson, C. S., O.B.E., *Secretary.*
Goldsmith, J. N.
Gray, W. H.
Green, A. G., F.R.S.
Green, Mrs. A. G.
Greenaway, A. J.
Gregory, Sir Richard.
Hamp, Miss A. G.
Harington, C. R.
Haworth, W. N.
Heath, Sir Frank, K.C.B., *Secretary, Department of Scientific and Industrial Research.*
Henry, T. A.
Henry, Mrs. T. A.
Hewitt, J. T., F.R.S.
Hill, C. A., *Chairman, Association of British Chemical Manufacturers.*
Hinchley, J. W.
Hodgkin, A. E., M.C.
Hooper, E. Grant.
James, T. C.
Johnson, J. D.
Jowett, H. A. D.
Kenyon, J.
Lakeman, Miss E.
Lakeman, H. B.
Lambourne, H.
Lapworth, A., F R.S.
Lowndes, J.
Lowry, T. M., C.B.E., F.R.S.
Maclean, Mrs. I. S.
Marlow, G. S. W.
Masson, Irvine, M.B.E.
Matignon, C., *Société Chimique de France.*
Matthews, E.
Maxwell, L. B.
Merrin, A. C.
Merrin, Mrs. A. C.
Miall, S.
Miall, Mrs. S.
Micklethwait, Miss F. M. G., M.B.E.
Micklethwait, St. J. G.
Mitchell, A. D., *Assistant Editor.*
Mitchell, Mrs. A. D.
Morris, H. J.
Neilsen, H.
Neilsen, Mrs. H.
Nixon, I. G.
Nutland, J. H.
Orton, K. J. P., F.R.S.
Paget, H.
Paget, Mrs. H.
Partington, J. R., M.B.E.
Partington, Mrs. J. R.
Patchin, G.
Philip, J. C., O.B.E., F.R.S.
Philip, Mrs. J. C.
Pickering, E. C.
Plimmer, R. H. Aders.
Pope, Sir William J., K.B.E., F.R.S., *Past-President.*
Porritt, B. D.
Porritt, Mrs. B. D.
Press Association.
Price, T. Slater, O.B.E., F.R.S., *Secretary.*
Pyman, F. L., F.R.S.
Pyman, Mrs. F. L.
Randerson, W.
Randerson, Mrs. W.
Robertson, Sir Robert, K.B.E., F.R.S.
Robertson, Lady.
Robinson, R., F.R.S.
Robinson, Mrs. R.
Rosedale, J. L.
Rost, F. E. B.
Rowlands, M. J.
Rutherford, Sir Ernest, O.M., *President, The Royal Society.*
Schlenk, W., *President, Deutsche Chemische Gesellschaft.*
Schryver, S. B.
Sharp, T. M.
Sidgwick, N. V., F.R.S.
Smith, Clarence, *Editor.*
Smith, P. A.
Smithells, A., C.M.G., F.R.S., *President, Institute of Chemistry.*
Sodeau, W. H.
Sodeau, Mrs. W. H.
Spencer, J. F.
Spencer, L. J., F.R.S.
Spielmann, P. E.
Sugden, J. N.
Sumner, The Right Hon. Viscount, G.C.B.
Teed, F. L.

Thomas, N. Garrod.
Thompson, G. E.
Thompson, Mrs. G. E.
Thorpe, J. F., C.B.E., F.R.S., *Treasurer.*
Thorpe, Mrs. J. F.
Times.
Turner, Miss E. G.
Turner, G. W.
Voelcker, J. A.
Wagner, W. G.
Watson, H. E.
Whiteley, Miss M. A., O.B.E.
Williamson, J. W.
Williamson, Mrs. J. W.
Wood, Miss F. M.
Wynne, Miss D. P.
Wynne, W. P., F.R.S., *Past-President.*

The following is a list of the Toasts proposed :—

1. " His Most Gracious Majesty The King."
2. " Her Majesty the Queen, His Royal Highness the Prince of Wales, and the other members of the Royal Family."
3. By The Right Honourable VISCOUNT SUMNER, G.C.B. :—
" The Chemical Society," coupled with the name of the President.
4. By SIR WILLIAM J. POPE, K.B.E., LL.D., F.R.S. :—
" The Guests," coupled with the names of
   (*a*) SIR ERNEST RUTHERFORD, O.M.,
   President of the Royal Society (1662).
   (*b*) Professor CAMILLE MATIGNON,
   representing the Société Chimique de France (1857).
   (*c*) Hofrat Professor Dr. Wilhelm Schlenk, President, Deutsche Chemische Gesellschaft (1867).

After the Loyal Toasts had been honoured, VISCOUNT SUMNER proposed the Toast of " The Chemical Society "; he said :—

Mr. President, Ladies, and Gentlemen, I have the honour to propose to you the toast of " The Chemical Society " coupled with the name of the President, and I put it to you now, and if you agree with me, I hope you will honour it in the usual way. That is a toast which needs no further words in support of it, and therefore I am justified in sitting down at once. Your response is not what I expected, and I can only suppose it is due to the fact that I am a stranger here.

When the President was so good as to ask me to this feast, he mentioned quite casually that it was the custom of the Chemical Society to include among the guests some persons who were not men of science, and it was in that capacity I understood I was invited. It struck me at the time as being an excellent reason for extending your hospitality to such as I am, because, as I thought, it could not but be good for us to see chemists in their habit as they live—a most attractive way, I am sure. I must confess you are not quite what I expected, because the learning which I am quite sure is present in all of you is not in every case as ostensible as I thought it would

be. A few days later, I received a letter from him asking me to propose this toast, and then I had misgivings, for with what object could a person, who was emphatically not a man of science, be asked to address the Chemical Society? And I could only think of blind Samson being made sport of long ago.

There used to be, when I was a boy, an excellent maxim which said, "Little boys should be seldom seen and never heard." I might have understood coming here and being seen on this rare occasion, but I should not on any terms be heard at all; yet here I am, entrusted with what is almost the toast of the evening and called upon to address you. What shall I say?

I have been supplied, by the kindness of the Secretary, with a quantity of printed information. There is a Report of the Council 1926—7, and there is an account of the state of your finances, which I notice, like the national finances, are slightly on the wrong side. Then at the end there are debit and credit accounts, income and expenditure accounts, and accounts of the Research Fund and Publications Fund and the Special Publications Fund and the General Purposes Fund and sundry others. I have read this document, not without some hope that I should find in it what I should eventually say to you, but except that I have discovered the very respectable fact that this Society was founded in 1841 and has a flourishing number of Fellows—I think no fewer than 4093—and that it is the practice of members of the Society to read papers to one another, with a warning that all manuscripts must be submitted in a legible and easily read handwriting—I am afraid I did not discover very clearly what bearing that printed document had on the speech I have to deliver to you.

But sincerely I wish the prosperity, which attended you in 1841, may continue till 1941 and 2041 and similar anniversaries. I should like to say something to you about chemistry, because that is the most humorous thing I can think of doing: to lay before a learned Society in my own original language my views on your science. I should think that must be full of fun, but whether, as they say in the United States, the joke would be on me, I cannot say. Then I have the recollection that some time ago I made a speech at a learned Society, whose name at the moment I cannot recollect; I know Sir Ernest Rutherford was there as the guest of the evening, and somehow or other, I cannot discover how, I gave the deepest offence, because one of the subsequent speakers pointed out, in terms of strong complaint, that in the presence of Sir Ernest Rutherford I had no right to speak about atoms in the light-hearted way I did.

You will therefore see what a very restricted field I have before

me, and I am still waiting for that friendly lead to enable me to resume my seat, before I am at last compelled to say something about the subject of the toast. I have had no scientific training whatsoever, having parted from mathematics at fifteen, never to resume the most distant acquaintance with them, knowing nothing of chemistry except by way of making smells at school in a cellar by the river Esk, which Professor Baker knows as well as I do, and I have to confess that I have followed a calling in which absolute knowledge and abstract science are not merely at a discount, but not understood at all. I have therefore always conceived a great admiration—I do not say for abstract science, but for those sciences in which pure knowledge is the real goal of men and women of pure science. You see, among lawyers there is no such thing as the desire to know the law in the abstract. You read law in order to get briefs and in order to win cases (sometimes it does equally well to lose them), and to obtain that promotion which comes with good luck and sound digestion, but as to a burning flame of desire to know what the law on any and every subject is, we know nothing of it.

I have always understood that, when you come to a man of pure science, he has no particular desire to advance human prosperity and to add to human happiness. Those things do come. Sometimes by accident he invents a gas, which prevents your feeling the pain of having your teeth pulled out; but his objective, his real goal, is to know, and to know more and more, and that is the charm of research. I was always told that your pride was to investigate something which you did not know and which led you nowhere, and left you no wiser at the end than at the beginning. This was the kind of thing I was trying to say on the other occasion. It has always seemed to me a very high and noble thing, much too high and noble for me. As far as I have been able to make out, pure scientific research now is largely connected with things you cannot possibly get at and can only know about by finding out what they do—sometimes very inconvenient things. I am told that no one has ever known what electricity is, except the undergraduate who said that he had known but had forgotten, but you find out curious effects in the way of making things twirl round and round, which the scientist has to use mysterious terms to explain. To take another example. We used to hear a lot about vitamins—things that are only postulated, because when you come down to the bare bones of the subject, if you eat one thing you thrive and if you eat another thing you do not, and I believe that is at the bottom of the present theory of the things you carry about in untold millions in your veins, which eat one another up and thereby preserve you

from immediate dissolution. You are perpetually finding yourselves on the verge not only of the unknown, but also of the unknowable, where you must postulate something you cannot possibly know, because there is no other explanation of the things you do dimly perceive. Hence you must invent something that cannot possibly be known at all.

In the course of the next four speeches, which may not have been entirely prepared beforehand, I expect to hear a word or two showing conclusively that abstract science is not really this at all, nor is this what it really means. All I can hope is that the Chemical Society will continue to pursue abstract science, to tread the noble path of knowledge for its own sake, to find (incidentally) advantages such as ought to attend on those who are entirely disinterested, and to flourish like a green bay tree. I give you the Toast of the Chemical Society, and ask your leave to couple with it the name of your President.

The PRESIDENT in reply, thanked Viscount Sumner for the kind way in which he had proposed the Toast. He welcomed among the guests present, not only Viscount Sumner, but especially Prof. Matignon, the representative of the French Chemical Society, and Prof. Schlenk, the President of the German Chemical Society, and stated that but for an attack of influenza, Prince Ginori Conti, the President of the Italian Chemical Society, would also have been with us. Their readiness to join in the Annual Meeting of the Chemical Society showed that not only in politics, but also in Science, the spirit of Locarno had begun to prevail. The President then referred to the loss sustained by the Society of the oldest and the youngest of its Past Presidents, Sir William Tilden and Dr. Crossley, and concluded his speech by pointing out the danger of publishing insufficiently considered hypotheses.

In proposing the Toast of "The Guests," Sir WILLIAM J. POPE stated that among the Guests present were not only men distinguished in Chemistry and in other branches of science, but also eminent men not associated with science. Though experiencing difficulty in making his selection, he coupled with the Toast the names of Sir E. Rutherford, President of the Royal Society, Professor Camille Matignon, representing the French Chemical Society, and Hofrat Professor Dr. W. Schlenk, President of the German Chemical Society.

In responding, Sir ERNEST RUTHERFORD said :—

Mr. President, my Lord, Ladies, and Gentlemen, it is a very great pleasure for me to be present here this evening, for I feel that I am among friends, and it is also a very great pleasure for me to reply, I am afraid very inadequately, to the toast of your Guests. I

am sure we are all very grateful for your hospitality and we appreciate the good company we have had this evening. I must also express my personal thanks to my colleague, Sir William Pope, for the kind way he has spoken of me. I do not remember any previous occasion when Pope and I have spoken on the same subject when sparks did not fly, but this evening must be an exception. In the very complimentary remarks about me and my work, I noted a certain sub-acidness which is characteristic of my friend. In this connexion, I am reminded of the stories which I used to read when I was in Canada, some twenty years ago, of the conversations between Mr. Dooley and Mr. Henessey, and there is one which I think is somewhat appropriate this evening. Mr. Henessey and Mr. Dooley were discussing the little troubles that have arisen from time to time between America and ourselves, and after an amusing dialogue, Dooley ended up the conversation in this way. He said, " After all, what can one expect from members of the same family with the same common language of abuse ! "

I have been acclaimed as a chemist this evening, and I feel very proud of the fact, but I know the regard in which I am held by my chemical friends is due to the fact that I am entirely ignorant of chemistry, and they all know it. During my life, however, I have made several minor incursions into the pure chemical arena, and it may be of interest if I briefly recall them, since I take a certain pride in my temerity.

Some of you may remember that many years ago Professor Boltwood of Yale University made the discovery that a preparation of actinium, carefully purified, grew radium at a rapid rate. This was a very important experiment, since it indicated that actinium was the long-looked-for radioactive parent of radium. I happened to have an actinium preparation in my laboratory, and after certain chemical treatment I obtained two fractions, both of which showed the characteristic radiating properties of actinium. One of these fractions grew radium at a rapid rate, whilst the other—a much more active preparation—did not grow radium at all. It was thus clear that actinium could not be the parent of radium, and Professor Boltwood was able to show later that the substance which he had supposed to be actinium, from the chemical properties assigned to it, was not actinium at all, but a new element which he named ionium. My friend Boltwood informed me, and I am sure quite rightly, that my luck in separating the two fractions was purely accidental, and due to the inadequacy of the chemical treatment which I had used.

The other incursion I made was some twenty years ago. I was asked by the late Sir William Ramsay to come to a meeting of the

Chemical Society in Burlington House to hear a paper by him on the volume of the radium emanation, that is, the volume of this gas when in equilibrium with one gram of radium. In an interesting lecture, he concluded that this volume was about ten cubic millimetres. Now, like Professor Baker, I make theories and sometimes stick to them. From certain calculations, I had estimated that the volume of the emanation must be about one cubic millimetre, so I intimated to the lecturer that I was fairly sure that 90 per cent. of the gas he had measured must be due to impurities. He naturally retorted that he was dealing with facts and that the theories must be altered to fit them. As a result of special experiments on the purification of the emanation, I was able to show, years later, that this first estimate of Ramsay was of the wrong order of magnitude. I have had such good luck in these chemical incursions that I do not propose to venture again.

Sir William Pope has told you that in a century's time I or my successor will not be a Professor of Physics, but professor of an evanescent science to be swallowed up by the advance of chemistry. I look at it from a rather different angle, and you can make what deduction you care to from the fact that I have a laboratory alongside Professor Pope, who has allowed me to occupy a part of his. We are also very sensible of the great work this Society has done for Chemistry since its foundation. There has been, as Sir William Pope has said, a very close relation between physics and chemistry during the last twenty years, and I hope that this may long be continued, and that in our individual directions we may continue to react with one another, but I hope with not too much heat. Although many advances have been made, we physicists recognise, probably even more than chemists, how relatively little we have accomplished and how much there is to be done before we can really tackle the great problem of chemical combination, which is, after all, the main *raison d'être* of this great Society.

While our knowledge of atomic structure has grown rapidly in recent years, it is still far from completion. It is at present going through a great change, due to the application of a new or wave mechanics to atomic problems. This new method has proved very powerful and fruitful in attacking certain types of problems, but has the disadvantage that it does not specify the position or motions of the electrons which make up the structure of the outer atom. The whole subject is at the moment in a transition stage, but we may hope to see a considerable clarification during the next four years. I hope there will also emerge new methods for attacking the fundamental problem of chemistry, namely, the way in which two or more elements combine.

A number of attacks have already been made on this question, some by men I see around me, but we cannot but recognise that it is a problem of great difficulty and complexity. We know little in detail of the magnitude and nature of the forces which bind atoms together, but I have sometimes thought that the natural way would first be to study the combination of atoms of matter of the same kind in the crystalline form, for example in metals. If an explanation can be found for the simplest combinations, it may lead to an attack of the more complex problem of combination of atoms of different kinds. Everyone must recognise the importance of this problem, for, after all, we ourselves and the world about us are examples of such chemical combinations, but fundamentally we know little, and have much to learn. I am hopeful that ultimately the physicist may be able to throw light on this greatest of problems which lies at the basis of chemistry.

Before concluding, I would like to refer to the great work initiated by your President by that study of matter in pure form, or rather in the dry form, which has shown such peculiar properties and reactions, or rather absence of reactions. It always seems to me that these results indicate that our present theories of chemical combination are at best very superficial, and I wish him every success in this important field of work.

Now I must not take more of your time, as we have our foreign guests to respond to this toast, but on behalf of all our non-chemical brethren and non-speakers, I must express our thanks for a very enjoyable evening, and our thanks to Sir William Pope for the very kind way he has proposed the toast of the guests.

Professor Camille Matignon said :—

Le Président de la Société Chimique de France, M. le Prof. Urbain, empêché n'a pu répondre à votre aimable invitation, et il m'a chargé de l'excuser et de vous exprimer en même temps tous ses regrets de ne pas être ce soir parmi vous.

J'ai accepté bien volontiers de le remplacer.

Si vous perdez beaucoup à cet échange, par contre, je m'en réjouis profondément, puisque cette substitution me procure l'agréable mission d'être l'interprète de mes compatriotes auprès de la Chemical Society, et de vous apporter l'expression de la très cordiale confraternité des chimistes français. C'est pour moi, délégué officiel pour la première fois en Grande Bretagne, un honneur dont je suis très fier.

Je suis heureux de vous donner l'assurance que la tension des liens qui nous unit à vous ne s'est pas relâchée et de vous confirmer l'inébranlable persistance de nos affections individuelles et de nos attachements collectifs.

Et comment, Messieurs, pourrait-il ne pas en être ainsi ? Sans

faire état des sentiments d'estime et d'attachement coutumiers entre nos deux pays, peut-il être cimenté, entre citoyens de nations différentes, une union plus intime que celle qui nait de la coopération intellectuelle ?

Ouvriers d'une même œuvre ; collaborateurs associés, en vertu d'une entente tacite, pour la recherche de la solution des mêmes problèmes ; travailleurs guidés par une même passion, la plus noble et la plus saine, celle de la recherche de la vérité et des applications de cette vérité à l'amélioration continue des conditions matérielles de l'humanité. Comment pourrions-nous résister à l'attraction, génératrice de chaudes sympathies, qui nous attire les uns vers les autres sur ce terrain d'union sacrée ?

Permettez-moi, Messieurs, puisque j'en ai l'occasion, de vous dire toute mon admiration pour la science anglaise. Cette admiration ne date pas d'hier. Elle a pris naissance au moment où, assis sur les bancs de l'Université, je pénétrais dans ce monument de la Science, en perpétuel état d'évolution et de développement, bâti avec les faits accumulés et coordonnés par nos devanciers. C'est alors que l'œuvre d'un de vos savants, Sir William Thompson, depuis Lord Kelvin, frappa profondément ma jeune imagination. Habile expérimentateur, algébriste et géomètre consommé, ingénieux, audacieux, doué d'un rare esprit d'invention, Lord Kelvin a embrassé par l'étendue de ses conceptions, à la fois le domaine entier de la théorie et celui des applications pratiques ; il est resté pour moi depuis cette époque, le type accompli du génie britannique.

Ce qui m'avait frappé chez Lord Kelvin et que j'ai retrouvé depuis chez la plupart de vous tous, c'est une puissante faculté imaginative, qu'on ne rencontre au même degré chez aucun peuple d'Europe, et qui vous permet de vous représenter un ensemble très compliqué de choses concrètes, de les voir chacune à sa place, en quelque sorte avec son mouvement et sa vie. Une autre caractéristique de la science anglaise, qui se dégageait nettement de l'œuvre de Lord Kelvin, c'est cette audace, à laquelle faisait allusion M. le Prof. Moureu, dans une de vos précédentes réunions annuelles ; tandis qu'en général, le chercheur français est prudent et souvent timoré, l'investigateur anglais semble, au contraire, rechercher dans le domaine de la science, tout ce qui est imprévu, tout ce qui est audacieux. Les résultats si curieux et si suggestifs obtenus par votre Président M. le Prof. Baker dans les travaux qu'il nous a exposé cet après-midi, travaux qui constituent à la fois un modèle d'expérimentation mais aussi un bel exemple d'audace, ne nous en apportent-ils pas une nouvelle vérification ?

Extraordinaire puissance de la faculté d'imaginer des choses

concrètes; audace dans la conception; audace dans l'expérimentation; ces éminentes qualités, qui sont à la base de l'esprit d'invention, caractérisent votre esprit scientifique. Elles ont été génératrices de vos découvertes les plus retentissantes.

Depuis mes débuts dans la science, mon enthousiasme pour la science anglaise n'a cessé de se consolider, et de se développer au fur et à mesure que se succédaient les innovations sensationnelles sorties de vos laboratoires. Ce fût d'abord la mise au jour par Lord Rayleigh et Ramsay d'un nouvel élément de l'air, l'argon, l'un des événements scientifiques les plus marquants de ma génération, puis vinrent l'hélium, le néon, le krypton, le xénon, qui se rangèrent avec une discipline parfaite dans une nouvelle colonne de la classification de Mendeléeff.

Avec ces nouveaux gaz d'une inertie chimique absolue, c'était un domaine entièrement nouveau acquis à la science; mais la classification de Mendeléeff, rajeunie par ces nouvelles découvertes, devait prendre plus tard son plein essor et atteindre son complet développement avec la loi de Moseley. Elle a pris désormais, grâce à vous, Messieurs, une place si importante dans la science, qu'elle domine à l'heure actuelle toute la chimie et condense en elle toutes nos connaissances sur la matière.

Enfin, Messieurs, car je suis obligé d'abréger, c'est d'un laboratoire de l'Université de Cambridge qu'est sortie toute l'atomistique moderne. Par l'étude systématique des phénomènes, alors si complexes et si déconcertants, de la conductibilité électrique des gaz, phénomènes dans lesquels on faisait jouer aux poussières un rôle souvent important, J. J. Thomson a dégagé avec netteté la notion d'ion gazeux, précisé celle de l'électron, et établi des méthodes cinétiques électriques d'une délicatesse, d'une subtilité qui dépassent toutes les prévisions les plus optimistes. Grâce à ces méthodes, il est possible d'agir avec sûreté et précision sur les atomes et les molécules, c'est à dire sur des individualités dont l'extrême petitesse n'a plus pour nous aucun sens réel; ces superinfiniment petits, que nous ne pourrons probablement jamais voir, on les pèse, on les classe, on les sépare, dès qu'ils présentent la moindre différence dans leurs masses et on les dénombre en mettant en évidence leur présence individuelle par certaines de leurs manifestations accessibles à nos sens.

La découverte des corps radioactifs, l'étude rapide de leurs propriétés résultent de la mise en œuvre de ces mêmes méthodes.

Quel chemin parcouru, Messieurs, depuis le jour où le premier ministre d'Angleterre, le Marquis de Salisbury, présidant à Oxford en 1894 à la British Association, prononçait son discours retentissant sur "Les limites actuelles de notre science," après avoir exposé les

apports de Dalton, de Kirchoff, de Mendeléeff, à la notion de l'élément chimique, l'éminent homme d'état ajoutait : " Ces triomphes successifs ne nous ont pas beaucoup avancés vers la solution des problèmes que les atomes élémentaires ont présentés à l'humanité pendant des siècles. . . . Savoir ce qu'est la particule insécable, si c'est un mouvement, une chose, un tourbillon, un point ayant de l'inertie ; déterminer s'il y a une limite à la divisibilité de cet être, et s'il en est ainsi, deviner comment cette limite est imposée ; décider si la longue liste des éléments est définitive ou si quelques uns ont une commune origine, toutes ces questions restent environnées de ténèbres aussi profondes qu'autrefois. Le rêve qui soutenait les alchimistes dans leurs pénibles travaux n'a sûrement point été réalisé mais il n'a point encore été dissipé. De ce côté, les frontières de notre science restent ce qu'elles étaient il y a un grand nombre de siècles."

Si ces conclusions négatives du Marquis de Salisbury sont désormais périmées, c'est à l'École Anglaise que nous le devons, c'est elle qui a été l'initiatrice des progrès merveilleux réalisés dans le domaine de l'atomistique, et c'est elle qui a apporté une part des plus importantes à son développement.

Messieurs, Je remercie bien vivement encore M. le Professeur Baker et les membres du Conseil de la Chemical Society pour leur invitation à cette brillante fête de la science. Je lève mon verre en l'honneur de la Science Britannique et de ses futurs succès, je bois à la prospérité de la Chemical Society, à la vieille et durable amitié qui unit la Chemical Society et la Société Chimique de France et puisque je suis Vice-président de la Société de Chimie Industrielle, permettez-moi de l'associer également à cette union.

Hofrat Professor Dr. W. SCHLENK said :—

Mr. President, Ladies, and Gentlemen, I desire to express my thanks to you for your kind invitation to me to be your guest. When I got your invitation my pleasure was a double one. I was glad of the opportunity to spend some hours in your company and rejoiced by the thought that this invitation was a sign of the improvement in international relations. I think, ladies and gentlemen, that every chemist must take a great interest in good international relations, because scientific work is international, and I am sure there is indeed nothing which could be an obstacle towards a good international relationship; certainly, ladies and gentlemen, there is nothing so important as a happy international relationship. In time of need we feel like children of our country, so British chemists feel as Britons, and other chemists as children of their country. This is natural, but an idealism is necessary for the restoration of the happy relationship we had before. Your invit-

ation gives me the hope that we are on the right road to regain what formerly was a matter of course, namely a mutual respect and confidence. With these remarks, ladies and gentlemen, accept my best thanks for your invitation, and my good wishes for your Society.

Ordinary Scientific Meeting, Thursday, April 7th, 1927, at 8 p.m., Professor H. Brereton Baker, C.B.E., LL.D., F.R.S., President, in the Chair.

The President referred to the loss sustained by the Society, through death on March 8th, of Mr. John Henry Smith, who was elected a Fellow on December 7th, 1911, and announced that:

1. The following Committees for 1927–1928 had been appointed by the Council:

Finance Committee: J. L. Baker, F. P. Dunn, Charles A. Hill, G. T. Moody, J. C. Philip, R. H. Pickard, W. P. Wynne, and the Officers (Treasurer as Chairman), with the Assistant Secretary as Secretary.

House Committee: J. L. Baker, H. B. Dixon, Sir Herbert Jackson, Sir Robert Robertson, Alexander Scott, J. M. Thomson, and the Officers, with the Assistant Secretary as Secretary.

Library Committee: T. A. Henry, J. R. Partington (Chairman), Alexander Scott, N. V. Sidgwick, S. W. Smith, J. F. Spencer, the Officers, together with representatives of contributing Societies, with the Librarian as Secretary.

Publication Committee: M. P. Applebey, H. Bassett, H. V. A. Briscoe, H. W. Dudley, U. R. Evans, J. J. Fox, R. Whytlaw Gray, A. J. Greenaway, T. A. Henry, C. K. Ingold, J. Kenyon, H. King, H. McCombie, T. S. Moore, G. T. Morgan, K. J. P. Orton, J. R. Partington, J. C. Philip, F. L. Pyman, E. K. Rideal, R. Robinson, N. V. Sidgwick (Chairman), and the Officers, with the Editor as Secretary.

Research Fund Committee: A. J. Allmand, E. C. C. Baly, F. E. Francis, W. N. Haworth, C. K. Ingold, W. H. Mills, F. L. Pyman, Sir Robert Robertson, N. V. Sidgwick, Sir James Walker, and the Officers, with the Assistant Secretary as Secretary.

2. The following letter of thanks had been received from Professor W. Schlenk, President of the German Chemical Society:

Berlin N. 4, den 29 März, 1927.
Hessische Str. 1.

Herrn Professor Baker,
Präsident der Chemical Society.

Hochverehrter Kollege,

Nach meiner Rückkehr aus London ist es mir ein herzliches Bedürfnis, Ihnen und Ihrer Gesellschaft nochmals herzlich zu danken für die genossene

Gastfreundschaft und für das so freundliche Entgegenkommen, dessen ich mich erfreuen durfte. Die freundliche Aufnahme, welche ich im Kreise der Chemical Society gefunden habe, lässt mich hoffen, dass die historischen guten Beziehungen zwischen englischen und deutschen Chemikern sich gewiss wieder einstellen werden, eine Tatsache, welche meinen hiesigen Freunden ebenso zur Freude gereicht wie mir selbst.

Nehmen Sie nochmals den besten Dank entgegen,
Ihres sehr ergebenen,
W. SCHLENK.

3. The Council had accepted the offer contained in the following letter from the Mond Nickel Company, Limited, and that copies of the full-sized and of the reduced-size chart could be obtained by Fellows on application to Mr. S. E. Carr :

VICTORIA STATION HOUSE,
VICTORIA STREET,
LONDON, S.W. 1.
31*st March*, 1927.

THE SECRETARY,
THE CHEMICAL SOCIETY,
BURLINGTON HOUSE,
W. 1.

Mond Process Chart.

DEAR SIR,

In view of numerous applications received by us from time to time for particulars of our method of refining nickel from Canadian ore by the Mond Carbonyl Process, a Chart, of which the enclosed is a reduced-size facsimile, has recently been prepared.

Should the full-sized chart, which measures 48″ (122 c/m) × 36″ (91 c/m), be of service to you and/or any of your members, we shall be pleased, upon hearing from you, to forward, without charge, one or more charts, together with such additional copies of the enclosed reduced sized facsimile as you may indicate.

Yours faithfully,
For The Mond Nickel Company, Limited,
F. B. HOWARD WHITE.
Secretary, Research and Development Dept.

The following were formally admitted Fellows of the Chemical Society: W. H. Brindley, Stanley E. Pusey, and Thomas K. Walker.

Certificates were read for the first time in favour of :

William John Bissell, 863, London Road, Westcliff-on-Sea.
Leslie George Scott Brooker, Ph.D., B.Sc., A.I.C., 54, Augustine Street, Rochester, N.J., U.S.A.
Victor Scotthorn George, 139, Bearwood Road, Smethwick.
William Claude Lyle, B.Sc., A.I.C., 308, Dumbarton Road, Glasgow.
Cecil Arthur Poulson, Haverstock, Shawlands, Glasgow.
John Storrow Rumbold, B.Sc., A.I.C., 22, Calton Avenue, Wavertree, Liverpool.

The following certificate has been authorised by the Council for presentation to ballot under Bye-Law I (2):

Genshiro Kurabayashi, The Tokyo Higher Normal College, Koishikawaku, Tokyo.

Dr. J. G. F. Druce and Dr. H. Phillips were appointed Scrutators, and a ballot for the election of Professor Richard Willstätter as an Honorary Fellow was held. Professor Willstätter was subsequently declared duly elected.

The following papers were read:

"Trypanocidal action and chemical constitution. Part VI. Amphoteric *s*-carbamidoarylarsinic acids." By H. KING.

"On active nitrogen. Part III. Active nitrogen and the metals." By E. J. B. WILLEY.

"Esterification in mixed solvents." By B. V. BHIDE and H. E. WATSON.

"The alkaloids of ipecacuanha. Part IV." By W. H. BRINDLEY and F. L. PYMAN.

FARADAY LECTURE.

An Extra Meeting of the Society will be held in the Theatre of the Royal Institution, Albemarle Street, W. 1. (by the courtesy of the Managers), on Wednesday, May 18th, 1927, at 5.30 p.m., when the Faraday Lecture, entitled "Problems and Methods in Enzyme Research," will be delivered by Professor Dr. Richard Willstätter.

Admission will be by ticket only. Each Fellow of the Society is entitled to two tickets, application for which should be made as early as possible to the "Assistant Secretary, Chemical Society, Burlington House, W. 1."

RESEARCH FUND COMMITTEE.

A meeting of the Research Fund Committee will be held in June next. Application for Grants, to be made on forms which can be obtained from the Assistant Secretary, Chemical Society, Burlington House, W. 1, must be received on or before Wednesday, June 1st, 1927.

All persons who received grants in June, 1926, or in June of any previous year, whose accounts have not been declared closed by the Council, are reminded that reports must be returned by June 1st.

List of Papers, or Abstracts thereof, received between March 17th and April 7th, 1927. (This List does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"The action of caustic alkalis on the 3-halogeno-4-nitrosodimethylanilines." By H. H. HODGSON and J. S. WIGNALL.

"Metallic hydroxy-acid complexes. Part IV. Complexes formed by copper with the monohydroxy monobasic acids." By I. W. WARK.

"Co-ordination compounds of beryllium and *m*- and *p*-nitrobenzoylacetone." By H. BURGESS.

"The crystal structure of quinol. Part II." By W. A. CASPARI.

"The scission of diaryl ethers and related compounds by means of piperidine. Part I. The scope of the method and its use in determining the constitution of some nitro-derivatives." By R. J. W. LE FÈVRE, S. L. M. SAUNDERS, and E. E. TURNER.

"The system $Ca_2Fe(CN)_6$–$Na_4Fe(CN)_6$–H_2O. Part II." By M. FARROW.

'The effect of mercury salts in the nitration of aromatic systems." By P. V. MCKIE.

"The structure of normal fructose: crystalline tetramethyl β-methylfructoside and crystalline tetramethyl fructose (1 : 3 : 4 : 5)." By W. N. HAWORTH, E. L. HIRST, and A. LEARNER.

"The reaction between manganese salts and sodium hypochlorite in the presence of certain other salts." By B. E. DIXON and J. L. WHITE.

"Reduction products of the hydroxyanthraquinones. Part VIII." By E. J. CROSS and A. G. PERKIN.

"Reduction products of the hydroxyanthraquinones. Part IX." By A. MACMASTER and A. G. PERKIN.

"Low-temperature oxidation of hydrocarbons." By J. S. LEWIS.

"The action of halogen-substituted phenylhydrazines upon dihydroxytartaric acid." By F. D. CHATTAWAY and W. G. HUMPHREY.

"A study of the chemiluminescence of phosphorus vapour." By E. J. BOWEN and E. G. PELLS.

"The synthesis of *meso*-alkyl and *meso*-aryl anthracene derivatives. Part II." By E. DE B. BARNETT, J. W. COOK, and J. L. WILTSHIRE.

"The use of titanous chloride in the volumetric estimation of copper and iron." By W. G. EMMETT.

"The effect of hydrochloric acid on the electrode potential between mercury and mercurous chloride. By S. R. CARTER, F. M. LEA, and R. ROBINSON.

"The oxidation-reduction potentials of mercurous and mercuric chlorides in hydrochloric acid solution." By S. R. CARTER and R. ROBINSON.

"The system ferric oxide–arsenic acid–water at low concentrations of arsenic acid." By N. H. HARTSHORNE.

"A process for the dehydration of alcohol." By E. L. SMITH.

"A method for the estimation of small quantities of water in alcohol." By E. L. SMITH.

"Researches in the menthone series. Part IV. *iso*Menthols and *iso*menthones." By J. READ, G. J. ROBERTSON, and M. R. COOK.

"Humic acid in British coals." By F. W. SMITH and D. H. JAPES.

"Studies of valency. Part VIII. The molecular structure of Vernon's dimethyltelluronium salts." By T. M. LOWRY and R. R. GOLDSTEIN.

"The action of nitrous acid on substituted *p*-phenylenediamines. Part I. Benzyl-*n*-butyl-*p*-phenylenediamine." By J. REILLY and P. J. DRUMM.

"The system lead chloride–lead iodide–water." By A. L. M. SOWERBY.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

(a) *From Dr. Otto Rosenheim.*

DEAN, JOHN. The organic compounds of tellurium and selenium belonging to the alcohol series. Goettingen 1855. pp. vi + 51.

LEWENAU, JOHANN EDLEN VON. Chemische Abhandlung über das Selen. Wien 1823. pp. viii + 144 + 3 tables.

LITTLE, GEORGE. On selenium and some of the seleniurets. Göttingen 1859. pp. 40.

OPPENHEIM, ALPHONS. Beobachtungen ueber das Tellur und einige seiner Verbindungen. Goettingen 1857. pp. 36.

RATHKE, BERNHARD. Beiträge zur Kenntniss des Selens. Halle 1869. pp. ii + 58. ill.

STOLTE, HENRICH. Ueber organische Selenverbindungen. Berlin 1887. pp. 48.

(b) *Miscellaneous.*

Académie des Sciences de l'Union des Républiques Soviétiques Socialistes. Travaux sur le radium et les minerais radioactifs. 2 vols. Leningrad 1924—1926. pp. viii + 176, vi + 276. ill. [In Russian.] (*Recd.* 15/3/27.) From the Academy.

American Electrochemical Society. Transactions. Vol. I, etc. Philadelphia 1902 +. (*For circulation.*)

—— —— General indexes. Vols. I—XX, 1902—1911, Vols. XXI—XL, 1912—1921. South Bethlehem 1913, and New York 1927. (*Reference.*) From the Faraday Society.

Armstrong, Henry Edward. Essays on the art and principles of chemistry, including the first Messel memorial lecture. London 1927. pp. xxxii + 276. ill. 15*s.* net. (*Recd.* 7/4/27.) From the Publishers: Messrs. Ernest Benn.

Chimie Industrielle d'après les travaux les plus récents. Par un professeur de chimie. 2 vols. [n.d.] pp. 274 + 43 plates. (*Reference.*) From Mr. S. H. Woolhouse.

Don, John. The filtration and purification of water for public supply. (Excerpt Minutes of Proceedings of the Meetings of the Institution of Mechanical Engineers, 1909.) pp. 210. ill. From the Author.

Don, John, and Chisholm, John. Modern methods of water purification. 2nd edition. London 1913. pp. xviii + 398. ill. (Second copy.) From Mr. John Don.

Dyer, Calico Printer, Bleacher, and Finisher. Vol. LVII, etc. London 1927 +. (*Reference.*) From the Society of Dyers and Colourists.

Ernährung der Pflanze. Illustrierte Halbmonatsschrift über Fortschritte im Ackerbau und landwirtschaftlichen Düngewesen des In- und Auslandes. Year XXIII, etc. Berlin 1927 +. (*Reference.*) From the Deutsche Kalisyndikat.

Hadfield, Sir Robert Abbott. Metallurgy and its influence on modern progress, with a survey of education and research. London 1925. pp. xvi + 388. ill. 25*s.* net. (*Recd.* 18/3/27.) From the Author.

Institute of Metals. Journal. Vol. I, etc. London 1909 +. (*For circulation.*)

—— —— Name-Subject index to vols. I—XXV, 1909—1921. London 1922. (*For circulation.*) From the Faraday Society.

Japan. *Imperial Academy.* Proceedings. Vol. II, etc. Tokyo 1926 +. (*Reference.*) From the Academy.

National Benzole Association and University of Leeds. *Joint Benzole Research Committee.* Fourth report. London 1927. pp. 248. ill. (*Recd.* 2/4/27.) From Mr. W. H. Coleman.

RUSSELL, SIR EDWARD JOHN. Soil conditions and plant growth. 5th edition. London 1927. pp. viii + 516. ill. 18*s.* net. (*Recd.* 22/3/27.) From the Author.

TEXTILE RECORDER. Vol. XLIV, etc. Manchester 1927 +. (*Reference.*) From the Society of Dyers and Colourists.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. VI. Part iii. Berlin 1927. pp. 481—720. *M.* 10. (*Recd.* 29/3/27.)

From the Publishers : Herren Urban & Schwarzenburg.

II. *By Purchase.*

ALCHEMISTISCHE BLÄTTER. Erste deutsches Fachblatt für alle Gebiete der Alchemie. Year I, etc. Berlin 1927 +. (*Reference.*)

BAARS, E. Über den Zustand des Ammoniaks in wässriger Lösung. (Sammlung, Vol. XXIX.) Stuttgart 1927.

BARRY, THOMAS HEDLEY, DRUMMOND, ALAN ASHBY, and MORRELL, ROBERT SELBY. The chemistry of the natural and synthetic resins. London 1926. pp. x + 196. 21*s.* net. (*Recd.* 21/3/27.)

HEVESY, GEORG VON. Das Element Hafnium. Berlin 1927. pp. iv + 49. ill. *M.* 3.60. (*Recd.* 29/3/27.)

JENNINGS, ARTHUR SEYMOUR. Paint and colour mixing : a practical handbook. 7th edition. London 1926. pp. 341. ill. 12*s.* 6*d.* net. (*Recd.* 17/3/27.)

KELLNER, OSKAR. The scientific feeding of animals. Authorised translation by WILLIAM GOODWIN. [2nd edition.] London 1926. pp. xiv + 328. 8*s.* 6*d.* net. (*Recd.* 29/3/27.)

LEGENDRE, R. La concentration en ions hydrogène de l'eau de mer. Le pH ; méthodes de mesure ; importance océanographique, géologique, biologique. Paris 1925. pp. viii + 292. ill. 30 *fr.* (*Recd.* 22/3/27.)

LIPPMANN, EDMUND OSKAR VON. Studien zur Geschichte der Chemie : Festgabe zum siebzigsten Geburtstage. Edited by JULIUS RUSKA. Berlin 1927. pp. vi + 242. *M.* 19.50. (*Recd.* 29/3/27.)

MARGOSCHES, BENJAMIN MAX, with the collaboration of LUDWIG FRIEDMANN and LISBETH HEERMANN-WOLF. Die Jodzahlschnellmethode und die Überjodzahl der Fette. Die Aktivierung des Jods durch Wasser. (Die chemische Analyse. Vol. XXV.) Stuttgart 1927. pp. x + 228. (*Reference.*) *M.* 16.20.

RUSKA, JULIUS. Tabula Smaragdina : ein Beitrag zur Geschichte der hermetischen Literatur. Heidelberg 1926. pp. vii + 248. *M.* 32. (*Recd.* 23/3/27.)

SUTERMEISTER, EDWIN. Casein and its industrial applications. New York 1927. pp. 296. ill. 21*s.* net. (*Recd.* 29/3/27.)

WAIT, DOUGLAS. The manufacture of enamel paints : a practical handbook. London 1927. pp. viii + 153. ill. 10*s.* 6*d.* net. (*Recd.* 17/3/27.)

WAR OFFICE. Manual of the medical aspects of chemical warfare. London 1926. pp. 92. ill. 9*d.* net. (*Recd.* 17/3/27.)

III. *Pamphlets.*

AERONAUTICAL RESEARCH COMMITTEE. Reports and Memoranda. No. 1016. Some physico-chemical studies on the effect of sunlight on cotton. By GUY BARR and ISABEL HODGSON HADFIELD. London 1926. pp. 22. ill.

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 31. Laboratory methods of determining the inflammability of coal dusts : historical survey and preliminary examination of the problems involved. By A. L. GODBERT. London 1927. pp. 68. ill.

—— —— Paper No. 32. The study of flame movement. By OLIVER COLIGNY DE CHAMPFLEUR ELLIS. London 1926. pp. 35. ill.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Fuel Research.* Physical and chemical survey of the national coal resources, No. 7. Methods of analysis of coal. London 1927. pp. vi + 35. ill.

—— —— Physical and chemical survey of the national coal resources, No. 8. An investigation of the caking power of coal. By JOHN THOMAS BURDEKIN. London 1927. pp. iv + 21. ill.

—— —— Technical Paper No. 15. Carbonisation of coal in continuous vertical retorts. "Holmside" (Durham) coal with experiments on the production of coal gas of high calorific value. London 1926. pp. iv + 44. ill.

—— —— Technical Paper No. 17. Low temperature carbonisation. Vertical retorts at H.M. Fuel Research Station. By CECIL HOWARD LANDER and J. FRASER SHAW. London 1927. pp. 7. ill.

STOWELL, FLAXNEY PERCIVAL. Physical and chemical conditions in the sea-water of the Zoological Society's aquarium—a comparison with the water of the open sea. (From the *Proc. Zool. Soc.*, 1925.)

—— The purification of sea-water by storage. (From the *Proc. Zool. Soc.*, 1926.)

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PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, May 5th, 1927, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., LL.D., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death on March 28th, of Mr. Hildyard John Eglinton Dobson, who was elected a Fellow on May 3rd, 1923.

Certificates were read for the first time in favour of:

James Bell, jun., B.Sc., A.I.C., 3, Finnart Terrace, Greenock.
William Ryle Clifford Curjel, B.A., Netherside, Woodbridge, Suffolk.
Albert de Bussy Goodman, Hatchgate, Massetts Road, Horley, Surrey.
Bhaba Nath Das Gupta, B.Sc., M.B., Noakhali, Bengal, India.
Cecil Owen Harvey, B.Sc., A.R.C.S., A.I.C., Government Laboratory, Clement's Inn Passage, Strand, W.C. 2.
James Shankland Merry, 22, Norwood Grove, Liverpool.

Mr. F. H. Lowe and Dr. G. A. C. Gough were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows:

Robert Andrew.
William Barklamb.
Fritz Alfred Bate, B.Sc.
Keith Lester Beak.
William Bradley, M.Sc.
Edwin Herbert Bunce, A.I.C.
David Henry Burton, B.Sc., A.R.C.S., A.I.C.
Charles McKenley Cameron.
Richard Chadwick, B.A.
Ronald Kington Christy, B.Sc.
Edgar Dawn Copley, B.A., B.Sc.
Thomas Eric Ellison.
Charles Forrester, F.I.C.
Gerald Charles Leake Griffin, B.A.
John Gurney, B.A.
James Charles Harral.
Norman Holt Hartshorne, M.Sc., A.I.C.
William Herbert Hatfield, D.Met.
Leonard Joseph Hooley, B.A., A.I.C.
George Robert Howard, B.Sc.
Thomas Alfred Jenkinson, B.Sc.
Louis Arnold Jordan, D.Sc., A.R.C.S. F.I.C.
Arthur William Knapp, B.Sc., F.I.C.
Jason Louis Edward Lewkowitsch, A.R.C.S.
James Hutchison McGregor, A.I.C.
Tarak Nath Majumdar.
Ernest Matthews, M.Sc., A.R.C.S., D.I.C.
Herbert Joseph Millward.
Alfred William Mond, B.A.
John Hopkinson Parker.
Dorothy May Lyddon Rippon, B.A.
Otto Leslie Shaw.
Arthur Shortt, B.Sc.
John Tomlinson, B.Sc.Tech.
Allan George Tyler, B.Sc.
Albert Denny Usher, B.Sc.
Carl Roman Ward, B.A.
Charles Barnett Wingfield.
Robert Louis Wormell.

The following papers were read:

"The nature of the alternating effect in carbon chains. Part XVIII. Mechanism of exhaustive methylation and its relation to anomalous hydrolysis." By W. HANHART and C. K. INGOLD.

"The interrelationships of the sulphur acids." By H. BASSETT and R. G. DURRANT.

"The constitution of the disaccharides. Part XIV. Melibiose and its relationship to raffinose." By W. CHARLTON, W. N. HAWORTH, and W. J. HICKINBOTTOM.

Extra Meeting held in the Theatre of the Royal Institution (by kind permission of the Managers) on Wednesday, May 18th, 1927, at 5.30 p.m., the President, Professor H. BRERETON BAKER, C.B.E., LL.D., F.R.S., occupying the Chair.

The company present numbered about 600.

In introducing the lecturer, the PRESIDENT said that they had met to honour the immortal name of Faraday. These Faraday Lectures were in no sense Memorial Lectures; the name of Faraday needed no memorial, for so long as science endured, the name of Faraday would be honoured and revered. In these Lectures, delivered triennially, the Chemical Society had had the co-operation of the most celebrated chemists and other men of science from all over the world, and that day it was able to add to that distinguished list the name of Richard Willstätter. Faraday was a border-line chemist, for although his discovery of benzene would entitle him to be called an organic chemist, most of his work dealt with the border-line of physics and chemistry. Prof. Willstätter was also a border-line chemist; the frontier on which he had won his fame was the frontier which joined chemistry and botany.

The President then asked Prof. Willstätter to deliver his lecture entitled: "Problems and Methods in Enzyme Research."

At the conclusion of the Lecture, the President, in presenting the Faraday Medal to Professor Willstätter, expressed the hope that it would be a happy souvenir of this great occasion.

In proposing a vote of thanks to the lecturer, Prof. W. H. Perkin paid a tribute to Prof. Willstätter for his outstanding work not only in connection with biochemical problems, but also in the various sections of pure organic chemistry. It had been rather difficult for those who had little or no practical acquaintance with the enzymes to keep touch with and follow the large number of important investigations which had been carried out in the laboratories of Prof. Willstätter. Fortunately, however, the Professor had recently

published two summaries containing the main results of the work which he and his co-workers had done in this field. From those summaries it was easy to appreciate how very difficult the work must always have been, and, in particular, how disappointing it must have been to find that these elusive substances lost their activity and other characteristic properties, and were sometimes even destroyed altogether, as the solution was concentrated. But it was far more instructive even than a study of those summaries to have the pleasant experience of listening to the author of all this work explaining the main results which had been achieved, and giving some idea of the amount of work which remained to be done in the future. They were all very greatly obliged to Prof. Willstätter for having given his brilliant and stimulating Lecture.

Prof. J. F. Thorpe, in seconding the vote of thanks, referred to Prof. Willstätter as a great organic chemist—so great that he was placed on a pinnacle as high as that occupied by his countrymen, Baeyer and Fischer. Prof. Willstätter had carried out epoch-making researches in a great number of branches of organic chemistry, any one of which would have made the reputation of any lesser man. With a courage which all admired, and which very few could emulate, he had left the " flowery " paths of organic chemical research and had entered that wilderness which was the province of the biochemist. Great things had been accomplished by the biochemists. The materials they had made, and the reactions they had discovered, were wonderful, but we still knew nothing of the mechanism of biochemical reactions, and until we did, we should know nothing of the meaning of life. It was only from the standpoint of organic structure that we could hope to obtain any insight into the mechanism of biochemical action, and therefore, when Prof. Willstätter had abandoned those " easy " syntheses and had entered the more difficult field, organic chemists welcomed the fact. Prof. Willstätter was still a young man; he had many years of active research before him, and they all hoped that he would continue his classical researches, and that his future work would be attended with every success. Organic chemists felt that if Prof. Willstätter failed in the study of the structure of the enzymes, then no one else would succeed.

The vote of thanks was accorded with enthusiasm, and, in making acknowledgment, Prof. Willstätter said :

" At this moment it is difficult for me adequately to express my feelings. Your invitation to give this Lecture and your award of this beautiful medal means for me the greatest distinction that could ever be conferred upon me, and the impressions of this hour are still further deepened by the more than warm and

friendly welcome you have given me, and which will ever live in my memory. Allow me to express my sincerest and most cordial thanks. By my reception into the circle of the Faraday Lecturers, you wish to associate me with that small band of scientists immortalised by your Society. I cannot but be aware of the distance that separates me from my great predecessors, but do I not owe this honour to your intention to unite together the scientists of every country and to let them share in paying homage to Faraday, who has so enriched all the world?

"In the last few days I have been privileged to visit Westminster Abbey and your museums and libraries. The impressions of these great works are vivid in my mind, for there are found the painter's brush, the sculptor's chisel, the poet's lyre, and thereto belongs also the scientist's ink, which the Koran even parallels with the martyr's blood. These lasting achievements of human spirit are international, they are the common possession of all mankind."

In concluding the business, the PRESIDENT expressed the Society's warm and appreciative thanks to the Managers of the Royal Institution for granting permission to hold this important celebration in this historic room. No one could stand in that room, with its associations of Davy, Faraday, and other great men of science, without profound emotion, and he was convinced of the fact that the Lecture being delivered there had helped to inspire Prof. Willstätter. The vote of thanks was accorded with acclamation.

Ordinary Scientific Meeting, Thursday, May 19th, 1927, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., LL.D., F.R.S., President, in the Chair.

The PRESIDENT announced that Miss Gladstone had presented an album containing photographs of eminent Chemists and other Men of Science belonging to the late Dr. John Hall Gladstone, Past-President.

Professor Dr. Richard Willstätter was formally admitted an Honorary Fellow of the Chemical Society.

Certificates were read for the first time in favour of:

Otto Guido Backeberg, B.A., M.Sc., A.I.C., University of the Witwatersrand, Johannesburg.

Leonard Bayley, 31, The Crescent, Friern Barnet, N. 11.

William Bleloch, B.Sc., Hazleyshaw, Albemarle Street, Kensington, Johannesburg.

Donald William Parker Boyd, M.A., c/o Messrs. Boileau & Boyd, Ltd., 91–93, Bride Street, Dublin.

Francisco Miguel Camps-Campins, B.Sc., 67, Frederick Road, Port-of-Spain, Trinidad.

Frederick Arthur Filby, B.Sc., 378, High Street North, East Ham, E. 12.
Robert Edwin Goldsbrough, Woodside, Great Horkesley, Colchester.
Vaidyanatha Subrahmanyan, B.A., Indian Institute of Science, Bangalore, India.

The following certificate has been authorised by the Council for presentation to ballot under Bye-Law I (2):

Eugenie Sachs, 280, Market Street, Pretoria, S. Africa.

The following paper was read:

"New developments in the study of acid catalysis. The catalytic catenary." By H. M. DAWSON.

At the next Ordinary Scientific Meeting, to be held on June 2nd, the following papers will be read:

"The passivity of metals. Part I. The isolation of the protective film." By U. R. EVANS.

"Studies of valency. Part VIII. The molecular structure of Vernon's dimethyltelluronium salts." By T. M. LOWRY and R. R. GOLDSTEIN.

"The factors controlling the formation of some derivatives of quinoline, and a new aspect on the problem of substitution in the quinoline series." By E. ROBERTS and E. E. TURNER.

List of Papers, or Abstracts thereof, received between April 7th and May 19th. (This List does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"Preparation of some substituted thioanisoles by direct methylthiolation." By H. H. HODGSON and F. W. HANDLEY.

"An investigation of the alleged second isoelectric point of gelatin." By B. N. GHOSH.

"The reduction of arsenic compounds in acid, and in alkaline solution by sodium hyposulphite (hydrosulphite). Production of sodium arseno-hyposulphite." By W. FARMER and J. B. FIRTH.

"Reduction of silver compounds in alkaline solution. Part I. Reduction in presence of aluminium." By W. FARMER and J. B. FIRTH.

"Reduction of silver compounds in alkaline solution. Part II. Hydrolysis of silver nitride." By W. FARMER and J. B. FIRTH.

"Monothioethyleneglycol. Part III. Nitrophenyl thioethers." By G. M. BENNETT and W. A. BERRY.

"The influence of the sulphur atom on the reactivity of adjacent atoms or groups. Part II. A quantitative comparison of the reactivities of chlorine in some β- and γ-chlorosulphides." By G. M. Bennett and W. A. Berry.

"The reactions of 1-anilino*cyclo*hexane-1-carboxylic acid. Synthesis of ψ-indoxyl-*spirocyclo*hexane." By R. L. Betts, R. Muspratt, and S. G. P. Plant.

"Sugar carbonates. Part III. Derivatives of γ-methylfructoside, γ-ethylfructoside, and normal methylfructoside." By C. F. Allpress, W. N. Haworth, and J. J. Inkster.

"The study of lactones derived from simple sugars." By H. D. K. Drew, E. H. Goodyear, and W. N. Haworth.

"The ternary system barium iodide–iodine–water and the formation of polyiodides." By A. C. D. Rivett and J. Packer.

"Substituted diaryl ethers. Part II. Amino-di-*p*-tolyl ethers." By J. Reilly and H. S. B. Barrett.

"Some sulphur derivatives of substituted benzaldehydes." By H. H. Hodgson and H. G. Beard.

"Substitution in hexahydrocarbazole derivatives." By J. Gurney and S. G. P. Plant.

"Striated photographic records of explosion-waves." By C. Campbell and D. W. Woodhead.

"The action of bromine on strontium hydroxide." By K. L. Malhotra, H. B. Dunnicliff, and H. D. Suri.

"The action of iodine on strontium hydroxide." By K. L. Malhotra, H. B. Dunnicliff, and R. K. B. Bahl.

"Electrometric and colorimetric dissociation constants of mono- and di-nitro-dihydric phenols." By F. L. Gilbert, F. C. Laxton, and E. B. R. Prideaux.

"The two *o*-cyanocinnamic acids." By W. Davies and H. G. Poole.

"Acid and salt effects in catalysed reactions. Part IX. A general kinetic method for the determination of the degree of dissociation of water." By H. M. Dawson.

"The dicarbazyls. Part III. The oxidation of carbazole and *N*-alkylcarbazoles in acid solution." By P. Maitland and S. H. Tucker.

"The nature of the alternating effect in carbon chains. Part XIX. The mechanism of certain migrations." By C. K. Ingold, E. W. Smith, and C. C. N. Vass.

"*ortho*-Nitrobenzyl phenyl dimethyl ammonium chloride." By H. Baw.

"The constitution of anthracene." By D. H. Peacock and B. K. Menon.

"Melting points of the substituted amides of dibasic acids." By C. R. BARNICOAT.

"The diacyl derivatives of benzidine and *p*-phenylene diamine." By F. J. A. BROGAN.

"Aromatic sulphonyl disulphides." By L. G. S. BROOKER, R. CHILD, and S. SMILES.

"The chemistry of the three-carbon system. Part XII. The effect of positive substituents in the α-position." By G. A. R. KON and B. T. NARAYANAN.

"The preparation of unsaturated ketones from the chlorides of hydroxy acids." By G. A. R. KON and B. T. NARAYANAN.

"The chemistry of the three-carbon system. Part XIII. The effect of bulky substituents and of the *cyclo*heptane ring." By G. A. R. KON and C. J. MAY.

"The constitution of the disaccharides. Part XIII. The γ-fructose residue in sucrose." By W. N. HAWORTH, E. L. HIRST, and V. S. NICHOLSON.

"The heat of adsorption of gases by charcoal." By S. J. GREGG.

"The Reimer–Tiemann reaction with *m*-chlorophenol." By H. H. HODGSON and T. A. JENKINSON.

"The temperature effects of mixing non-aqueous liquids." By W. M. MADGIN, J. B. PEEL, and H. V. A. BRISCOE.

"Low temperature oxidation at charcoal surfaces. Part IV. The active areas for different acids and their relative rates of oxidation." By W. M. WRIGHT.

"Imino-aryl ethers. Part V. The effect of substitution on the velocity of molecular rearrangement." By A. W. CHAPMAN.

"The preparation and hydrolysis of the isomeric β-tolylethyl bromides." By J. B. SHOESMITH and R. J. CONNOR.

"Melting points and heats of crystallisation of homologous series. Part III. Myristic acid derivatives." By W. E. GARNER and J. E. RUSHBROOKE.

"The electroendosmosis of aqueous solutions through a diaphragm of sintered glass powder." By F. FAIRBROTHER and H. VARLEY.

"Aminobenzthiazoles. Part X. The effect of polar substituents on the formation and stability of the bromo-addition compounds of the benzthiazole series and the synthesis of some disubstituted 1-anilinobenzthiazoles." By G. M. DYSON, R. F. HUNTER, and C. SOYKA.

"Aminobenzthiazoles. Part XI. The effect of the atomic volume of the alkyl group on the stability of the bromides of the 5-substituted 1-alkylaminobenzthiazoles." By R. F. HUNTER and E. R. STYLES.

"Investigations in the diphenyl series. Part VI. Note on the configuration of diphenyl derivatives." By F. Bell and P. H. Robinson.

"The action of diazonium salts on pyrones, and their parent substances. Part I." By R. T. Mullen and W. H. Crowe.

"The decomposition of nitrous acid in aqueous solution." By T. W. J. Taylor, E. W. Wignall, and J. F. Cowley.

"Some observations on the determination of surface tension by means of capillary rise. The surface tension of water, ethyl alcohol, boron trichloride, and silicon tetrachloride." By H. Mills and P. L. Robinson.

"The action of the silver salt of ethyl dehydroundecylenate upon alkyl halides." By W. W. Myddleton and R. G. Berchem.

"A new equation for electrode potentials." By M. Meyer.

"The inflammation of mixtures of the paraffins and air in a closed spherical vessel." By G. B. Maxwell and R. V. Wheeler.

"The chemistry of polycyclic structures in relation to their homocyclic unsaturated isomerides. Part VIII. The differing effects of the *gem*-dimethyl and *spiro-cyclo*hexane groupings on the direction of blocking of an intra-annular tautomeric system by substitution." By C. K. Ingold and E. A. Seeley.

"The nature of the alternating effect in carbon chains. Part XX. The conditions underlying vicinal substitution in *o*-substituted benzenes containing *op*-orienting groups." By C. K. Ingold and E. W. Smith.

"Note on the estimation of potassium in presence of iodide." By F. S. Hawkins and J. R. Partington.

"The factors controlling the formation of some derivatives of quinoline, and a new aspect on the problem of substitution in the quinoline series." By E. Roberts and E. E. Turner.

"Chemical action at an interface; the production of acidity in neutral salt solutions." By N. V. Achar and F. L. Usher.

"Syntheses of cyclic compounds. Part I. Ethyl $\beta\gamma$-dimethyl butane $\alpha\alpha\delta\delta$-tetracarboxylate and some *cyclo*butane compounds derived therefrom." By I. Vogel.

"*cis–trans*-Isomerism of disulphoxides." By E. V. Bell and G. M. Bennett.

"The mercuration of *o*-nitrophenol." By H. H. Hodgson.

"A new method of (absolute) potentiometric titration." By B. Cavanagh.

"Ionisation and chemical change during slow combustion." By J. A. J. Bennett and E. W. J. Mardles.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, JUNE 16TH, 1927.

BACKEBERG, OTTO GUIDO, University of the Witwatersrand, Johannesburg, South Africa. British. Lecturer in Chemistry. B.A. (Hons.), Oxford, 1923. M.Sc., Johannesburg, 1926. A.I.C., 1924. "The Theory of Indicators," *South African Journal of Science*, Vol. XXI, pp. 243–257. "Alkyl Hypochlorites," *Journal of S.A. Chemical Institute*, January, 1925; "Alkyl Hypochlorites," *J.C.S.*, 1923, p. 2999 (with Dr. F. D. Chattaway); "The Chlorination of Ethyl Alcohol," *J.C.S.*, 1924, p. 1097 (with Dr. F. D. Chattaway). (*Signed by*) J. A. Wilkinson, Henry Stephens, F. D. Chattaway.

BAYLEY, LEONARD, 31, The Crescent, Friern Barnet, N. 11. English. Propaganda Manager to The Hoffmann–La Roche Chemical Works, Ltd., 7 & 8 Idol Lane, E.C. 3. Reasons for wishing to become a Fellow: (1) to be privileged to attend the evening meetings; (2) to have an opportunity of perusing and studying the Society's proceedings and literature; (3) to use the Society's Library. For many years engaged in writing, compiling, and editing printed matter on chemical, pharmaceutical, and medical subjects, and in translating such matter into English from various continental languages. (*Signed by*) J. Langford Moore, Archibald Macpherson, E. T. Neathercoat.

BELL, JAMES, jun., 3, Finnart Terrace, Greenock. British. Research Student, Chemistry Dept., Glasgow University. B.Sc. with 1st Class Hons. in Chemistry, June 1926. Elected A.I.C. 1926. D.S.I.R. Research Student for 1926–27–28. (*Signed by*) G. G. Henderson, T. S. Patterson, R. Wright, David T. Gibson.

BISSELL, WILLIAM JOHN, 863, London Road, Westcliff-on-Sea, Essex. British. Works Chemist. Student at the East London College, 1922–1926. Chemist at the Ipswich Beet Sugar Factory during the 1926–27 Campaign. (*Signed by*) J. R. Partington, W. H. Patterson, F. E. King.

BLELOCH, WILLIAM, "Hazleyshaw," Albemarle St., Kensington, Johannesburg, South Africa. British. Research Student in Chemistry. B.Sc., University of the Witwatersrand. At the present time carrying out research in organic chemistry for the degree of M.Sc., and therefore desirous of keeping in touch with modern developments of the subject. (*Signed by*) Henry Stephen, J. McCrae, J. A. Wilkinson.

BOYD, DONALD WM. PARKER, M.A., "Glensavage," Stillorgan, Co. Dublin. Irish. Chemist and Druggist. Having been a student of chemistry both at Trinity College (Dublin University) and Kevin St. Tech. Schools, Dublin. Candidate has now complete control and charge of the manufacturing laboratory of Messrs. Boileau & Boyd, Ltd., Wholesale Chemists and Druggists, Dublin, and desires admission as Fellow of the Society in order that he may be brought into closer touch with manufacturing chemistry. (*Signed by*) Emil A. Werner, Sydney Young, Kenneth C. Bailey, James Bell.

BROOKER, LESLIE GEORGE SCOTT, 54, Augustine Street, Rochester, N.Y., U.S.A. British. Organic Chemist, Eastman Kodak Coy., Rochester, N.Y. 1st Class Hons. B.Sc. (Lond., 1923). A.I.C. Ph.D. (Lond., 1926). "A Method of Inserting the Thio-aryl Group," Brooker and Smiles, *J.C.S.*, 1926, 1723. (*Signed by*) H. T. Clarke, Samuel Smiles, A. J. Allmand.

CAMPS-CAMPINS, FRANCISCO MIGUEL, 67, Frederick Street, Port of Spain, Trinidad. British Subject. Sugar Technologist and Chemist. B.Sc. (Audubon Sugar School). Superintending Chemist to J. Supple's Sons Pltg. Co.,

Sugar Factory at Bayou Goula, La., U.S.A., and to The American Syrup & Sorghum Co., Fort Smith (Syrup) Factory at Arkansas, U.S.A., during the grinding season. (*Signed by*) P. E. Turner, Joseph de Verteuil, James D. Kettle.

CURJEL, WILLIAM RYLE CLIFFORD, Netherside, Woodbridge, Suffolk. British. Research Student. B.A. (Oxon.), 1st Class Hons. Chemistry. Research Studentship (Oxford), 1926. (With F. D. Chattaway), *J.C.S.*, 1926, p. 3210, "The Crystalline Forms of 5-Nitro-salicylic Acid and of Related Compounds." (*Signed by*) H. L. Bowman, F. D. Chattaway, T. V. Barker.

FILBY, FREDERICK ARTHUR, 378, High St. N., East Ham, London, E. 12. English. Student, entering Secondary School Teaching in September (1927). B.Sc., 2nd Class Hons., London, Chem., 1926. (*Signed by*) J. R. Partington, E. E. Turner, F. E. King.

GEORGE, VICTOR SCOTTHORN, 139, Bearwood Road, Smethwick. British. Analytical and Metallurgical Chemist. Over 14 years' experience as an Analytical Chemist, including 3 years' partnership with J. Lones, F.I.C., Smethwick. I wish to keep in touch with modern research. (*Signed by*) J. Newton Friend, J. Cooper Duff, J. H. Wood.

GOLDSBROUGH, ROBERT EDWIN, Woodside, Great Horkesley, Colchester. British. Managing Director. Managing Director of Goldsbrough Patents Co., Ltd. Inventor of Oil Water Gas Processes and Processes for the Production of Ethylene from Fuel Oil. (*Signed by*) Herbert Harris, A. M. Low, K. C. Browning.

GOODMAN, ALBERT DE BUSSY, Hatchgate, Massetts Rd., Horley, Surrey. British. A.I.C. Student, Battersea Polytechnic. Exams. passed: (1) Cambridge Local; (2) Union of Education, 1st Class Theor. Chemistry; (3) Royal Soc. Arts English; (4) Matriculation; (5) Inter. B.Sc., Chemistry, Physics, and Botany; (6) Honours Course at King's College; (7) A.I.C. passed Pract. Chemistry, French, German, failed Theoretical Chemistry. Experience in Cement Analysis, with H. F. Knight, F.I.C., 14, Old Queen St. (*Signed by*) J. Kenyon, Harold Hunter, J. L. White.

GUPTA, BHABA NATH DAS (Noakhali—a district town in Bengal, India). Indian Hindu. B.Sc., M.B. (Calcutta University). As a medical practitioner, I like to remain in constant touch with the progress of chemistry (especially biochemistry). (*Signed by*) A. C. Sircar, J. C. Ghosh, P. C. Guha.

HARVEY, CECIL OWEN, Government Laboratory, Clement's Inn Passage, Strand, W.C. 2 (31, Camden Square, N.W. 1). British. Assistant Chemist. B.Sc. (London). A.R.C.S. A.I.C. Late Assistant Chemist to Messrs. T. Morson & Son, Ltd., The British Launderers' Research Association, etc. *The Analyst*, 1925, 538; 1926, 238. *Chemistry and Industry*, 1925, 815, 1110; 1926, 233; 1927, 317. (*Signed by*) A. G. Francis, W. Maw, J. S. Carter.

LYLE, WILLIAM CLAUDE, 308, Dumbarton Road, Glasgow, W. 1. British. Research Student, Chemistry Dept., Glasgow University. B.Sc., 1st Class Honours in Chemistry, Glasgow, 1926. A.I.C., elected 1926. Strang-Steel Research Scholar, Glasgow Univ., 1926–27. (*Signed by*) G. G. Henderson, T. S. Patterson, R. Wright, David T. Gibson.

MERRY, JAMES SHANKLAND, 22, Norwood Grove, Liverpool. English. Assistant Chemist and Demonstrator to the Liverpool Borax Co., Ltd. Five years in the Liverpool laboratory of Messrs. William Gossage & Sons, Ltd., doing all kinds of process control analysis. Two months in the Gossage Widnes laboratory. Three months as Assistant Chemist to the Liverpool Borax Co., Ltd. (*Signed by*) George Tate, George S. Irving, Charles A. Kelly.

POULSON, CECIL ARTHUR, "Haverstock," Shawlands, Glasgow. British.

Superintending Engineer for Scotland for Messrs. Wests Gas Improvement Co., Ltd., Manchester. *Present Position :* To advise upon and direct tests to obtain improved results in the carbonisation of coals, and extraction of residuals, together with the manufacture of bye-products from residuals. *Late :* Chief Technical Assistant Engineer and Manager for Messrs. W. G. Bagnall, Ltd., Locomotive Engineers, Stafford. Studied Chemistry for 5½ years at Stafford Technical School. (*Signed by*) Thomas Henry Poulson, Joseph Poulson, Cyril Douglas Birks.

RUMBOLD, JOHN STORROW, 22, Calton Avenue, Wavertree, Liverpool. British. Chemistry Master at the Holt Secondary School, Sefton Park, Liverpool. Special B.Sc. (Lond.), 1st Class Hons. in Chemistry. A.I.C. Formerly Research Chemist with the British Oxygen Co. Works Chemist with the Corby Ironstone Co. Works Chemist with the British Celanese Co. Now engaged in research work at the University of Liverpool and in independent research. (*Signed by*) J. B. Firth, F. C. Laxton, V. J. Occleshaw, A. O. Jones.

SUBRAHMANYAN, VAIDYANATHA, Lecturer in Biochemistry, Indian Institute of Science, Bangalore, India. British Indian. Lecturer in Biochemistry. B.A., University of Madras. "Studies relating to Acetone-producing Organisms," *J. Ind. Inst. Sci.*, 1925; "Biochemistry of Waterlogged Soils" (4 parts), in *J. Ag. Sci.*, 1927; "On New Methods relating to the Estimation of Carbohydrates, Fatty Acids, and Lactic Acid in Soils"; "A Modified Method for Estimating Dissolved Oxygen," etc., etc. (*Signed by*) H. J. Page, Ralph P. Hobson, H. L. Richardson.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

KURABAYASHI, GENSHIRO, The Tokyo Higher Normal College, Koishikawaku, Tokyo, Japan. Japanese. Prof. of Inorganic and Analytical Chemistry, Tokyo Higher Normal College. Graduate of the Tokyo Higher Normal College (1905). Prof. of Inorganic and Analytical Chemistry at the Department of Chemistry, Tokyo Higher Normal College (1911–). Member of the Chemical Society of Japan (1923–). (*Signed by*) Joji Sakurai.

SACHS, EUGENIE, 280, Market Street, Pretoria, S. Africa. British subject. Chemist and Pharmacist. Occupied in making Pharmaceutical preparations in firm of Nathan Sachs, Pretoria, S. Africa. I have also the qualification as a pharmacist of the Pharmaceutical Society of Great Britain. (*Signed by*) H. Lucas.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ARCHBUTT, LEONARD, and DEELEY, RICHARD MOUNTFORD. Lubrication and lubricants. A treatise on the theory and practice of lubrication, and on the nature, properties, and testing of lubricants. 5th edition. London 1927. pp. xxxii + 650. ill. 36*s.* net. (*Recd.* 3/5/27.) From the Authors.

CHEMICAL ENGINEERING AND CHEMICAL CATALOGUE. A catalogue of heavy and fine chemicals, raw material, machinery, plant, and

equipment applicable to production industries, standardised, condensed and cross-indexed. Compiled with the co-operation of leading British manufacturers. Edited by DUDLEY MAURICE NEWITT. 3rd edition. London [1927]. pp. 404. ill. (*Reference.*) 15*s.* net. From the Publisher : Mr. Leonard Hill.

DOTY, MARION FOSTER. Selenium : a list of references, 1817–1925. New York 1927. pp. iv + 114. (*Reference.*) $·65.
From Mr. C. Ainsworth Mitchell.

HORSFALL, RONALD S., and LAWRIE, LESLIE GORDON. The dyeing of textile fibres. London 1927. pp. xii + 416. 28*s.* net. (*Recd.* 29/4/27.) From the Publishers : Messrs. Ernest Benn.

IRON AND STEEL INDUSTRY and British Foundryman. Supplement to "The Metal Industry." Vol. I, etc. London 1927 +. (*Reference.*) From the Faraday Society.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. V. Part ii. Berlin 1927. pp. 290 to 528. *M.* 10. (*Recd.* 30/4/27.)
From the Publishers : Herren Urban & Schwarzenberg.

II. *By Purchase.*

COHEN, ERNST. Physico-chemical metamorphosis and some problems in piezochemistry. New York 1926. pp. x + 190. ill. 12*s.* 6*d.* net. (*Recd.* 11/5/27.)

COLLOID SYMPOSIUM MONOGRAPH. Papers presented at the fourth National Symposium on Colloid Chemistry. New York 1926. pp. 378. ill. 27*s.* net. (*Recd.* 25/4/27.)

LA WALL, CHARLES H. Four thousand years of pharmacy : an outline history of pharmacy and the allied sciences. Philadelphia 1927. pp. xvi + 666. ill. 25*s.* net. (*Recd.* 11/5/27.)

LINTON, R. G. Animal nutrition and veterinary dietetics. Edinburgh 1927. pp. xii + 400. ill. 21*s.* net. (*Recd.* 11/5/27.)

NEBLETTE, C. B. Photography, its principles and practice : a manual . . . for use in colleges, technical institutions, and by the advanced student of the science. [New York] 1927. pp. xviii + 644. ill. 30*s.* net. (*Recd.* 11/5/27.)

PARRISH, PERCY, and OGILVIE, ALEXANDER. Artificial fertilisers : their chemistry, manufacture and application. Vol. I. London 1927. pp. 356. ill. 45*s.* net. (*Recd.* 11/5/27.)

ROSS-MACKENZIE, JOHN. A standard manual of brewing and malting and laboratory companion : a practical guide to the art and science of brewing and malting, and to the physical and chemical evaluation of the materials employed. . . . Based on "A handy book for brewers," by H. E. WRIGHT. London 1927. pp. xxii + 412. ill. 45*s.* net. (*Recd.* 11/5/27.)

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, June 2nd, 1927, at 8 p.m., Professor H. Brereton Baker, C.B.E., LL.D., F.R.S., President, in the Chair.

The President referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Wilfred Carpmael	June 15th, 1899.	May 31st, 1927.
James David Kettle	Dec. 6th, 1901.	May 20th, 1927.
Edalji Manekji Modi.....	Dec. 7th, 1905.	Sept. 13th, 1924.
William Carleton Williams ...	Feb. 19th, 1874.	May 25th, 1927.

W. H. Hatfield was formally admitted a Fellow of the Chemical Society.

Certificates were read for the first time in favour of:

Stephen de Finály, Lónyay-u, 41, Budapest.
David Clarence Rhys Jones, B.Sc., 10, Berkeley Avenue, Levenshulme, Manchester.
Robert Napier Kerr, B.Sc., Ph.D., 22, St. Bernard's Crescent, Edinburgh.
Cyril Dunn Lawrence, B.Sc., 46, Juer Street, Park Road, Battersea, S.W. 11.
Harry Pavion, 4, Brideoak Street, Cheetham, Manchester.

The following papers were read:

"The passivity of metals. Part I. The isolation of the protective film." By U. R. Evans.

"Studies of valency. Part VIII. The molecular structure of Vernon's dimethyltelluronium salts." By T. M. Lowry and (Mrs.) R. R. Goldstein.

"The factors controlling the formation of some derivatives of quinoline, and a new aspect on the problem of substitution in the quinoline series." By E. Roberts and E. E. Turner.

Ordinary Scientific Meeting, Thursday, June 16th, 1927, at 8 p.m., Professor H. Brereton Baker, C.B.E., LL.D., F.R.S., President, in the Chair.

The President referred to the loss sustained by the Society, through death, of:

	Elected.	Died.
Edward Day Gravill	June 16th, 1887.	May 6th.
Harold McLean Read	May 4th, 1899.	April 23rd.
Gotfred Midgley Taylor	Dec. 7th, 1882.	June 11th.

The PRESIDENT announced that:

1. It had been decided to issue shortly, in separate form, the Faraday Lecture delivered by Prof. Richard Willstätter on May 18th. The price will be one shilling each, and application should be made to the Assistant Secretary.

2. The Annual Reports on the Progress of Chemistry for 1927, Volume XXIV, will be sold at 5*s.* 6*d.* post free to those Fellows who apply by *Christmas Day*, 1927.

3. It had been decided to issue the Abstracts "A" (Pure Chemistry) for 1928, *printed on one side of the page only* at the reduced price of £1 to Fellows who apply to the Assistant Secretary by *Christmas Day*, 1927. A remittance for £1 must accompany the application, and Fellows should state whether they wish to receive the Abstracts gummed, or ungummed. Further notice will be given.

The PRESIDENT then stated that he had the happy duty to perform of making a presentation to Mr. S. E. Carr, to mark the completion of his 25th year as Assistant Secretary. Before making the formal presentation, he asked Dr. Alexander Scott to make a few remarks.

Dr. Scott said that it gave him great pleasure to comply with the President's request, for he had held office for 24 out of the 25 years Mr. Carr had been Assistant Secretary—as Secretary from 1902 to 1904, as Treasurer from 1904 to 1915, and as President from 1915 to 1917—and no one could speak with greater knowledge and authority than he of the services rendered by Mr. Carr to the Society.

The announcement of Mr. Carr's appointment was made in the Annual Report of the Council for 1903 in the following simple words: "After careful consideration, the Council decided to separate the duties of Assistant Secretary from those of the Librarian and Curator, Mr. Steele retaining the latter, whilst Mr. S. E. Carr has been appointed Assistant Secretary." The Council never did an act more timorously, and no Council had ever made a wiser or more successful appointment.

He stated that it was found necessary to undertake a thorough revision of the entire business methods of the Society, and the brunt of this work had fallen upon Mr. Carr and himself, and only they could appreciate what this meant. At this early and trying stage of his career, Mr. Carr fully justified the selection of the Council and proved the value of his business training. Throughout all the

succeeding years and the consequent numerous changes in the Officers and in the personnel of the Committees, there has been only one opinion as to the wisdom of the appointment made 25 years ago. Mr. Carr has thrown his whole soul and energy into everything that he could do to promote the welfare of the Society, utterly regardless of the amount of work any new development might bring upon himself. He would say to those present and to all who know Mr. Carr personally that nothing could have given him greater pleasure and satisfaction than this opportunity of thus testifying to Mr. Carr's inestimable services to the Society.

The PRESIDENT, after expressing his appreciation of Mr. Carr's courtesy and of his devotion to his work, handed him two cheques, one from the Council and the other from Fellows, who had given in addition a " Grandmother " clock and an Album containing the signatures of the Honorary Fellows and the Fellows who had contributed.

Mr. Carr, in expressing his gratitude for the gifts, spoke of his great indebtedness to the Council, and to the Fellows of the Society who had contributed to the presentation. The Album would, he said, be particularly precious, as it would ever serve as a reminder of the intimate and happy associations he had always had with the Honorary Officers and with many of the Fellows. He deeply regretted that the Album did not contain the signatures of Sir William Tilden and Dr. Crossley, recalling that it was Sir William who offered him the appointment and who honoured him with his friendship. Mr. Carr stated how much pleasure it gave him to see present Prof. Thomson, for he was associated with him more than 30 years ago, and Dr. Scott, with whom he had worked for so many years; it was also a very happy coincidence that Dr. Forster should happen to be in London at this time. Again expressing his deep thanks to all those who had contributed to the presentation, Mr. Carr wished to thank especially warmly the Treasurer and those assisting him for the trouble they had so generously taken with regard to the presentation. The appreciation of his services manifested by the generous gifts would be an incentive to him to continue to carry on his work for the Society with enthusiasm and to the utmost of his ability.

Certificates were read for the first time in favour of :

Albert William Kemp Ingram, B.A., 261, High Street, Sheerness.
Arthur Hereward Millard, 8, Westhall Road, Park Lane, Bath.
William Alexander Hugh Oswald, B.A., White Knights, St. George's Hill, Weybridge.
Bijoor Sanjiva Rao, B.A., Indian Institute of Science, Bangalore, India.

Dr. H. Burgess and Mr. F. P. Dunn were elected Scrutators, and

a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows:

Otto Guido Backeberg, B.A., M.Sc., A.I.C.
Leonard Bayley.
James Bell, jun., B.Sc., A.I.C.
William John Bissell.
William Bleloch, B.Sc.
Donald Wm. Parker Boyd, M.A.
Leslie George Scott Brooker, B.Sc., Ph.D., A.I.C.
Francisco Miguel Camps-Campins, B.Sc.
William Ryle Clifford Curjel, B.A.
Frederick Arthur Filby, B.Sc.
Victor Scotthorn George.
Robert Edwin Goldsbrough.
Albert de Bussy Goodman.
Bhaba Nath Das Gupta, B.Sc., M.B.
Cecil Owen Harvey, B.Sc., A.R.C.S., A.I.C.
Genshiro Kurabayashi.
William Claude Lyle, B.Sc., A.I.C.
James Shankland Merry.
Cecil Arthur Poulson.
John Storrow Rumbold, B.Sc., A.I.C.
Eugenie Sachs.
Vaidyanatha Subrahmanyan, B.A.

The following papers were read:

"Syntheses of cyclic compounds. Part I. Ethyl $\beta\gamma$-dimethyl butane-$\alpha\alpha\delta\delta$-tetracarboxylate and some *cyclo*butane compounds derived therefrom." By I. VOGEL.

"A new method of (absolute) potentiometric titration." By B. CAVANAGH.

"*Cis–trans*-isomerism of disulphoxides." By E. V. BELL and G. M. BENNETT.

"Decomposition of some halogenated sulphides, and the nature of the 'polymeric' ethylene sulphides." By E. V. BELL, G. M. BENNETT, and A. L. HOCK.

The Council has made the following Grants from the Research Fund:—

	£	s.	d.
Study of ketones of the type $R_2C{:}CH{\cdot}CO{\cdot}C_2H_5$. (Miss) A. E. Abbott	10	0	0
Orienting influences of certain groups in benzene nuclei. A. W. Baldwin	5	0	0
Studies in aliphatic and cyclic sulphides (*contd.*). G. M. Bennett	10	0	0
Effect of ring formation on substitution and on the reactivity of substituted groups. A. Brewin	10	0	0
Mechanism of isomeric change in aromatic compounds (*contd.*). A. W. Chapman	10	0	0
Determination of structure of certain sesquiterpene derivatives by synthesis. G. R. Clemo	15	0	0
Introduction of substituents into the azo benzene molecule. J. Dexter	5	0	0
Tautomerism of the ketones of the type *cyclo*hexanyl acetone (*contd.*). A. H. Dickins	10	0	0
Synthetic experiments in the sugar group. H. D. K. Drew ...	10	0	0
Isolation of dvi-manganese from manganese-containing compounds (*contd.*). J. G. F. Druce	6	0	0

	£	s.	d.
$a\beta$-Dicyano esters of aliphatic acids. P. K. Dutt	15	0	0
Properties of conjugated compounds. Factors governing additive reactions. J. T. Evans	10	0	0
Syntheses of partially substituted glycerols and other compounds. A. Fairbourne	15	0	0
Equilibria between $a\beta$- and $\beta\gamma$-unsaturated acids (*contd.*). A. A. Goldberg	10	0	0
Experiments in the *iso*quinoline series. R. D. Haworth ...	10	0	0
Studies in the monosaccharide group. E. L. Hirst	10	0	0
Oxidation of sugars and the preparation of reference compounds. D. I. Jones	5	0	0
Formation and nitration of *N*-substituted piperidines. R. J. W. Le Fèvre	5	0	0
Studies in polymerisation. C. W. Long	7	0	0
Condensation of aldehydes with glycine anhydride. P. G. Marshall and W. P. Dickinson	5	0	0
Synthesis of hexoses. S. Peat	5	0	0
Structure of simple sugars. J. H. G. Plant	5	0	0
Effect of the so-called "strainless" rings on the carbon tetrahedral angle (*contd.*). K. A. N. Rao	15	0	0
Structure of sparteine. R. Raper	10	0	0
Relative reactivities of halogens in alkyl halides. H. W. Rudd	3	0	0
Influence of groups and associated rings on the stability of certain ring systems (*contd.*). S. S. G. Sircar	12	10	0
Synthesis of cyclic compounds. I. Vogel	10	0	0
Mechanism of the oxidation of fatty acids by enzymes secreted by mould fungi. T. K. Walker	10	0	0
Spatial structure of *cyclo*paraffins (*contd.*). W. A. Wightman ...	10	0	0
	£263	10	0

THE LIBRARY.

The Library will be closed for Stocktaking from Monday, August 1st, until Saturday, August 13th, 1927 (inclusive). During the following four weeks (August 15th to September 10th), the Library will close daily at 5 p.m.

LIST OF FELLOWS, 1927.

The List of Fellows for 1927 is now in active preparation, and will be supplied to those Fellows who make application to the Assistant Secretary by July 31st, 1927. In order that the new List may be as complete as possible, Fellows are invited to notify any change of address, or other alteration, before that date.

List of Papers, or Abstracts thereof, received between May 19th and June 16th, 1927. (This List does not include the titles of papers

which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Equilibrium diagram of the system thallium–phosphorous." By Q. A. Mansuri.

"On the condensation of cinnamic acid with resorcinol and pyrogallol." By T. E. Ellison.

"The nature of the sintering of active copper catalysts." By F. H. Constable.

"The action of alkalis on clay." By H. B. Oakley.

"Strychnine and brucine. Part IV." By G. R. Clemo, W. H. Perkin, and R. Robinson.

"Strychnine and brucine. Part V." By J. M. Gulland, W. H. Perkin, and R. Robinson.

"Besson's supposed phosphorus suboxide, P_2O." By L. J. Chalk and J. R. Partington.

"The electronic structure of atoms. Part I. The periodic classification." By J. D. M. Smith.

"The oxidation of nitrophenylcyanoacetates. Part II." By A. Fairbourne and H. R. Fawson.

"Gold and mercury derivatives of 2-thiolglyoxalines. Mechanism of the oxidation of 2-thiolglyoxalines to glyoxalines." By I. E. Balaban and H. King.

"The preparation of 4-hydroxycoumarin derivatives." By I. M. Heilbron and D. W. Hill.

"Styrylpyrylium salts. Part IX. Colour phenomena associated with benzonaphtha- and dinaphtha-*spiro*pyrans." By R. Dickinson and I. M. Heilbron.

"The absorption spectrum of ergosterol, in relation to the photosynthetic formation of vitamin-*D*." By R. A. Morton, I. M. Heilbron, and E. D. Kamm.

"Organic compounds of arsenic. Part III. Orthotriphenylene diarsine." By N. P. McCleland and J. B. Whitworth.

"Chlorocamphoranilic acids and chlorophenyl camphorimides." By M. Singh and R. Singh.

"The isomeric hydroxybenzyldimethylamines." By E. Stedman.

"A synthesis of rutaecarpine." By Y. Asahina, R. H. F. Manske, and R. Robinson.

"Methyl mercuric halides and hydroxide." By L. E. Hinkel and T. H. Angel.

"The oxidation of triacontane." By F. Francis and N. E. Wood.

"A new form of thermostat and observation tubes for polarimetric work." By T. S. Patterson.

"Molecular structure in solution. Part II. The refractive indices

and surface tension of aqueous solutions of cobalt chloride and hydrochloric acid." By O. R. HOWELL.

"A synthesis of safrole and *o*-safrole." By W. H. PERKIN and V. M. TRIKOJUS.

"Acid and salt effects in catalysed reactions. Part X. The hydrolysis of ethyl acetate with acetic acid as catalyst." By H. M. DAWSON and W. LOWSON.

"Experiments on the synthesis of anthocyanins. Part III." By A. ROBERTSON and R. ROBINSON.

"The catalytic hydrogenation of different types of unsaturated compounds. Part II. The hydrogenation of conjugated systems." By S. V. LEBEDEV and A. O. YAKUBCHIK.

"The systems B_2O_3–SO_3–H_2O and B_2O_3–P_2O_5–H_2O." By M. LEVI and L. F. GILBERT.

"Studies in the coumarin series. Part I. The action of the Grignard reagent upon substituted coumarins." By I. M. HEILBRON and D. W. HILL.

"The intermolecular condensation of styryl methyl ketones. Part I." By R. DICKINSON, I. M. HEILBRON, and F. IRVING.

"Reactions of sodium compounds of aromatic ketones. Part I. Synthesis of triarylcarbinols and of triarylmethane dyes." By E. H. RODD and F. W. LINCH.

"Reactions of sodium compounds of aromatic ketones. Part II. Their reaction with methyl and methylene groups and their products of decomposition." By E. H. RODD and F. W. LINCH.

"Molecular volumes at absolute zero. Part I. Density as a function of temperature." By S. SUGDEN.

"Molecular volumes at absolute zero. Part II. Zero volumes and chemical composition." By S. SUGDEN.

"The action of hydrazines on semicarbazones. Part III." By W. BAIRD and F. J. WILSON.

"Nitro-derivatives of the homopyrocatechol ethers." By A. E. OXFORD.

"The thermal dissociation of carbonyl chloride." By H. INGLESON.

"The isomerism of the oximes. Part XXXI. The furfuraldoximes and 2-methoxy- and 4-methoxy-1-naphthaldoximes." By O. L. BRADY and R. F. GOLDSTEIN.

"Syntheses of glucosides. Part I. The synthesis of indican." By A. ROBERTSON.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ASKINSON, [GEORGE WILLIAM]. Le manuel du parfumeur. 4th French edition. By RENÉ SORNET. Paris 1927. pp. vi + 142. ill. 18 *fr.* (*Recd.* 15/6/27.]

From the Publishers: MM. Gauthier Villars et Cie.

BRENCHLEY, WINIFRED ELSIE. Inorganic plant poisons and stimulants. 2nd edition. Cambridge 1927. pp. x + 134. ill. 10*s.* 6*d.* net. (*Recd.* 30/5/27.) From the Author.

CAVEN, ROBERT MARTIN. Atoms and molecules: being Part I and Chapter XII of "The foundations of chemical theory." London 1927. pp. viii + 142. ill. 7*s.* net. (*Recd.* 3/6/27.)

From the Publishers: Messrs. Blackie & Son.

MARTIN, ARTHUR JOHN. The activated sludge process. London 1927. pp. xiv + 416. ill. 30*s.* net. (*Recd.* 13/6/27.)

From the Author.

SAUNDERS, VIVIAN T. The polarimeter: a lecture on the theory and practice of polarimetry. London [1927]. pp. 30. ill. 1*s.* 6*d.* net. (*Recd.* 24/5/27.) From the Publishers: Messrs. Adam Hilger.

STEVENS, HENRY POTTER. The paper mill chemist. 3rd edition. London 1926. pp. viii + 317. ill. 10*s.* 6*d.* net. (*Recd.* 24/5/27.) From the Author.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. VI. Part iv. Berlin 1927. pp. 721 to 960. *M.* 10. (*Recd.* 8/6/27.)

From the Publishers: Herren Urban & Schwarzenberg.

TWYMAN, FRANK. Two lectures on the development and present position of chemical analysis by emission spectra. London [1927]. pp. 43. ill. 2*s.* 6*d.* net. (*Recd.* 24/5/27.)

From the Publishers: Messrs. Adam Hilger.

[UNITED STATES] NATIONAL RESEARCH COUNCIL. A survey of American chemistry. Vol. I, July 1, 1925 to July 1, 1926. Edited by WILLIAM J. HALE in co-operation with CLARENCE JAY WEST. New York 1927. pp. 258. (*Reference.*) From the Editors.

II. *By Purchase.*

BAUD, PAUL. Chimie industrielle. La grande industrie chimique; les métalloïdes et leur composés; les métaux et leurs sels; industries organiques. 2nd edition. Paris 1927. pp. xii + 1022. ill. 100 *fr.* (*Recd.* 17/6/27.)

BELL, SIR WILLIAM JAMES. The Sale of Food and Drugs Acts, . . . with notes and cases. 7th edition. By CHARLES F. LLOYD and

R. A. Robinson. London 1923. pp. xxvi + 374 + 54. 15*s*. net. (*Recd*. 21/5/27.)

Blasdale, Walter Charles. Equilibria in saturated salt solutions: a summary of the results of the study of the heterogeneous equilibria which exist in aqueous solutions of electrolytes. New York 1927. pp. 198. ill. 19*s*. net. (*Recd*. 16/5/27.)

Dammer, Bruno, and Tietze, Oskar. Die nutzbaren Mineralien mit Ausnahme der Erze und Kohlen. 2nd edition. Vol. I. Stuttgart 1927. pp. xx + 554. ill. *M*. 35·40. (*Recd*. 21/5/27.)

Foster, William. The romance of chemistry. New York 1927. pp. xvi + 468. ill. 12*s*. 6*d*. net. (*Recd*. 8/6/27.)

Fränkel, Sigmund. Die Arzneimittel-Synthese. Auf Grundlage der Beziehungen zwischen chemischem Aufbau und Wirkung. 6th edition. Berlin 1927. pp. vii + 935. *M*. 93. (*Recd*. 2/6/27.)

Gottlob, [Kurt]. Technology of rubber. Translated from the German edition of 1925 by Joseph L. Rosenbaum. London 1927. pp. xvi + 350. ill. 42*s*. net. (*Recd*. 18/5/27.)

Haas, Arthur. Atomic theory: an elementary exposition. Translated by Terence Verschoyle. London 1927. pp. xiv + 222. ill. 10*s*. 6*d*. net. (*Recd*. 18/5/27).

Haber, Fritz. Aus Leben und Beruf: Aufsätze, Reden, Vorträge. Berlin 1927. pp. vii + 173. ill. *M*. 5·70. (*Recd*. 2/6/27.)

Hall, Archibald John. Textile bleaching, dyeing, printing and finishing machinery. London 1926. pp. 320. ill. 50*s*. net. (*Recd*. 16/5/27.)

Herzog, Reginald Oliver. [Editor.] Chemische Technologie der organischen Verbindungen. 2nd edition. Heidelberg 1927. pp. xii + 997. ill. *M*. 70. (*Recd*. 21/5/27.)

Hevesy, Georg von. Die seltenen Erden vom Standpunkte des Atombaues. (Struktur der Materie in Einzeldarstellungen.) Berlin 1927. pp. vii + 140. ill. *M*. 10·20. (*Recd*. 2/6/27.)

Hückel, Walter. Katalyse mit kolloiden Metallen. (Kolloidforschung in Einzeldarstellungen.) Leipzig 1927. pp. viii + 86. ill. *M*. 6. (*Recd*. 18/5/27.)

Hund, Friedrich. Linienspektren und periodisches System der Elemente. (Struktur der Materie in Einzeldarstellungen.) Berlin 1927. pp. vi + 221. ill. *M*. 16·20. (*Recd*. 2/6/27.)

Kolthoff, I. M. Konduktometrische Titrationen. Dresden 1923. pp. vii + 94. ill. *M*. 2·75. (*Recd*. 25/5/27.)

Meyer, Stefan, and Schweidler, Egon. Radioaktivität. 2nd edition. Leipzig 1927. pp. x + 722. ill. *M*. 36. (*Recd*. 25/5/27.

Möbius, Martin. Die Farbstoffe der Pflanzen. Berlin 1927. pp. vii + 200. ill. *M*. 14·50. (*Recd*. 21/5/27.)

MOOKERJI, BHUDEB. Rasa-jala-nidhi, or, Ocean of Indian chemistry and alchemy. Vol. I. Compiled in Sanskrit with English translation. Calcutta [1926]. pp. xxiv + 350 + vi. 15*s.* net. (*Recd.* 18/5/27.)

PULLIN, V. E., and WILTSHIRE, W. J. X-rays past and present. London 1927. pp. 230. ill. 12*s.* 6*d.* net. (*Recd.* 18/5/27.)

SMITH, EDGAR FAHS. Old chemistries. New York 1927. pp. xii + 90. ill. 12*s.* 6*d.* net. (*Recd.* 9/6/27.)

STRACHE, HUGO, and ULMANN, HEINRICH. Leitfaden der Technologie der Brennstoffe. Leipzig 1927. pp. x + 471. ill. *M.* 24·40. (*Recd.* 8/6/27.)

THAYSEN, AAGE CHRISTIAN and BUNKER, HENRY JAMES. The microbiology of cellulose, hemicelluloses, pectin and gums. London 1927. pp. viii + 364. ill. 25*s.* net. (*Recd.* 11/5/27.)

TOLMAN, RICHARD C. Statistical mechanics with applications to physics and chemistry. New York 1927. pp. 334. 29*s.* 6*d.* (*Recd.* 13/6/27.)

WORLD POWER CONFERENCE. Transactions of the Basle Sectional meeting 1926. 2 vols. Basel [1927]. pp. xxxii + 1258, xxiv + 1538. ill. (*Reference.*) £5 net.

III. *Pamphlets.*

BARTON, FRANCIS RICKMAN. Nickel coinage. London [1926]. pp. iv + 50. ill.

BUTLER, JOE B. Descriptive bibliography on oil and fluid flow and heat transfer in pipes. (From *Bull. Univ. Missouri School of Mines and Metallurgy, Tech. Series*, 1926, 9.)

CARPENTER, HENRY CORT HAROLD. Methods of growing large metal crystals : being the fourth Sorby Lecture, delivered on Friday, October 22nd, 1926. [Sheffield 1927.] pp. 31. ill.

COWARD, HUBERT FRANK [and others]. The explosibility of methane and natural gas. (Bulletin 30, Mining and Metallurgical Investigations.) Pittsburgh 1926. pp. viii + 42. ill.

ELWORTHY, R. T. Helium in Canada. (Canada, Department of Mines. Mines Branch No. 679.) Ottawa 1926. pp. iv + 64. ill.

HANCOCK, GEORGE CHARLES. A report on the occurrence of glass fragments in foods packed in glass containers. (*Ministry of Health Reports on Public Health and Medical Subjects*, No. 37.) London 1927. pp. iv + 36. ill.

—— Report on an outbreak of illness at Poplar suspected to be due to local pollution of the water supply. (*Ministry of Health Reports on Public Health and Medical Subjects*, No. 41.) London 1927. pp. iv + 27. ill.

LASAREFF, P. Untersuchungen über die Ionentheorie der Reizung. Parts V–X. (From *Pflügers Archiv. f. d. ges. Physiol.* 1922—26, 197—214.)

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 33. The inflammation of coal dusts: the effect of the chemical composition of the dust. By T. N. MASON and RICHARD VERNON WHEELER. London 1927. pp. 20.

—— —— Paper No. 34. Safety in mines research station, Buxton. A description. London 1927. pp. 45. ill.

MINISTRY OF HEALTH. Report of the Departmental Committee on the treatment of flour with chemical substances. London 1927. pp. 24.

MONIER-WILLIAMS, GORDON WICKHAM. The determination of benzoic acid in foodstuffs. (*Ministry of Health Reports on Public Health and Medical Subjects*, No. 39.) London 1927. pp. iv + 57. ill.

—— The determination of sulphur dioxide in foods. (*Ministry of Health Reports on Public Health and Medical Subjects*, No. 43.) London 1927. pp. vi + 56. ill.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN. Pharmacological Laboratories. First annual report, 1926. London [1927]. pp. 7.

ROTHAMSTED CONFERENCES. I. The growing of lucerne. Report of a conference held at Rothamsted on January 27th, 1926. London 1926. pp. 32.

—— II. The culture and manuring of fodder crops. Report of a conference held at Rothamsted on March 30th, 1926. London 1926. pp. 40.

—— III. Green manuring, its possibilities and limitations in practice. Report of a conference held at Rothamsted on December 10th, 1926. London 1927. pp. 39.

—— IV. The culture and manuring of sugar-beet. Report of a conference held at Rothamsted on January 19th, 1927. London 1927. pp. 56.

RUSSELL, SIR EDWARD JOHN [and others]. The manuring of potatoes. (From the *J. Ministry Agric.*, 1926, 32.)

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. Co-operative industrial research: an account of the work of research associations under the Government scheme. London 1927. pp. viii + 46. ill.

—— Report of the Stone Preservation Committee. London 1927. pp. iv + 33. ill.

—— *Building Research.* Special Report No. 9. Limes and lime mortars. By ALFRED DENYS COWPER. London 1927. pp. vi + 81. ill.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Engineering Research.* Special Report No. 1. Properties of materials at high temperatures. I. Mechanical properties of Armco Iron, 0·17 per cent. carbon steel, and 0·24 per cent. carbon steel, with special reference to creep. By H. J. TAPSELL and W. J. CLENSHAW. London 1927. pp. viii + 60.

—— *Food Investigation.* Special Report No. 30. Gas storage of fruit: the use of artificial atmospheres of regulated composition . . . for the purpose of preserving fresh fruit during overseas transport or in land stores. By FRANKLIN KIDD, CYRIL WEST, and M. N. KIDD. London 1927. pp. viii + 85. ill.

—— *Fuel Research.* Technical Paper No. 16. The primary decomposition of coal. 1. The temperature of initial decomposition. By JAMES GRIEVE KING and ROBERT ERNEST WILLGRESS. London 1927. pp. vi + 19. ill.

TATTERSFIELD, FREDERICK, GIMINGHAM, CONRAD THEODORE, and MORRIS, H. M. Studies on contact insecticides. Parts I to IV. (From the *Ann. Applied Biol.*, 1925–26, 12–13.)

UNION INTERNATIONALE DE LA CHIMIE PURE ET APPLIQUÉE. Rapport du Comité de Travail de Réforme de la Nomenclature de Chimie Minérale. Paris 1926. pp. 20.

WANDER, GEORG. Über das "Hesperidin" einiger Pflanzen. Bern 1925. pp. iv + 72 + 8 plates.

[WAR OFFICE.] *Research Department, Woolwich.* R.D. Report No. 67. The influence of molybdenum on medium carbon steels containing nickel and chromium. [By J. A. JONES.] London 1927. pp. 59. ill.

WEIDERPASS, N., and KOGERMAN, P. Über die Anwendbarkeit der Brennschieferöl-Phenolate zur Holzkonservierung. (From the *Sitz. Nat.-Ges. Univ. Tartu*, 1926, 33.)

WELCH, MARCUS BALDWIN, and COOMBS, FRANK ANDREW. The principal tanning materials of Australia, and their leather forming properties. (*Sydney Technological Museum Bulletin*, No. 10.) 1926. pp. 20 + 7 plates.

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PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, October 20th, 1927, at 8 p.m., Professor H. Brereton Baker, C.B.E., D.Sc., F.R.S., President, in the Chair.

The President referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
Svante August Arrhenius (Honorary Fellow)	Jan. 20th, 1898.	Oct. 2nd, 1927.
George H. Bostock	June 16th, 1881.	August 1st, 1927.
Benjamin A. Burrell	May 4th, 1882.	July 3th, 1927.
Madanlal J. Gajjar	June 20th, 1912.	July 25th, 1926.
Cuthbert C. Gibbes	Feb. 6th, 1890.	August 25th, 1927.
Alfred J. Gregory	June 18th, 1891.	July 14th, 1927.
Archibald Liversidge	Nov. 7th, 1872.	Sept. 26th, 1927.
Wallace C. Nickels	Dec. 5th, 1889.	July 5th, 1927.
Henry R. Procter	June 15th, 1871.	August 17th, 1927.
Stanley E. Pusey	Feb. 17th, 1927.	May 23rd, 1927.
John T. Sheard	June 16th, 1887.	July 20th, 1927.
Herbert Trewby	March 15th, 1888.	Oct. 19th, 1926.

and stated that the following resolution had been passed by the Council at its Meeting held that afternoon :

> The Council desires to express its deep sorrow at the death of Svante August Arrhenius, who had been a distinguished Honorary Fellow of the Society for nearly twenty years.
>
> The Council records its sense of the irreparable loss the Science of Chemistry has sustained throughout the world, and offers to Madame Arrhenius its warmest sympathy in her bereavement.

It was announced that :

1. Sir Joseph J. Thomson, O.M., F.R.S., Master of Trinity College, Cambridge, had been proposed by the Council as an Honorary Fellow of the Society, and that a ballot for his election would be held at the next Ordinary Scientific Meeting on November 3rd.

2. The Jubilee Dinner of the Institute of Chemistry would be held on Thursday, December 15th, and the Council had decided to abandon the Ordinary Scientific Meeting arranged for that evening.

3. The following address had been sealed and would be presented on the occasion of the Marcelin Berthelot Centenary Celebrations to be held in Paris, October 23rd to 26th, 1927, and that the Society would be represented by the President, Professor H. Brereton Baker, Mr. A. Chaston Chapman, and Professor C. S. Gibson :—

The Chemical Society
to
Le Comité Marcelin Berthelot.

On the occasion of the celebration of the Centenary of the birth of Marcelin Berthelot, we, the President, Council, and Fellows of the Chemical Society, desire to join with you, his countrymen, in paying homage to the memory of the man whose name stands as a symbol for the lifelong pursuit of knowledge in the cause of truth and of civilisation.

In Berthelot we honour the man who first explained the ethereal salts and showed the rôle of Glycerin as a "triatomic" alcohol; who proved that chemical actions might proceed both directly and inversely until an equilibrium was reached; who laboured for years at thermo-chemistry to build up our science on the sure foundation of mechanical laws; who startled us by the explosion-wave; who charmed us with the origins of Alchemy.

But above all we are indebted to Berthelot as the man who first opened to us a new world of Synthetic Organic Chemistry. We are proud to remember that in 1860 our Society honoured itself and him by electing him an Honorary Fellow, and that we possess in our Journal the record of that brilliant experimental lecture in which he showed us how to "forge the first links of the extended chain of organic compounds by methods belonging purely to mineral chemistry."

We look back on Berthelot as one of the great pioneers of Science. In all his explorations he ever sought for the origins of things; he never rested until he discovered the principles underlying the chemical changes he studied.

We of a younger generation who follow his footsteps recognise the master-mind in all his researches; we deeply feel the inspiration of his genius.

Signed on behalf of the Chemical Society,

H. B. Baker, *President.*
Jocelyn Thorpe, *Treasurer.*
T. Slater Price, } *Secretaries.*
C. S. Gibson, }
F. G. Donnan, *Foreign Secretary.*

(L.S.)

Sealed in Council this Seventh Day of July, One Thousand Nine Hundred and Twenty-seven.

The following were formally admitted Fellows of the Chemical Society: L. Bayley, F. A. Filby, F. G. Soper, R. P. Linstead, W. A. Berry, L. H. N. Cooper, G. C. L. Griffin, G. H. Locket.

Certificates were read for the first time in favour of:

Stanley Birks, B.A., The Limes, High View Avenue, Grays.
George Edward Kevin Blythe, B.Sc., Ph.D., 20, Pantygwydr Road, Uplands, Swansea.
Charles Nightingale Clay, B.Sc., A.I.C., 81, Cromwell Road, S.W. 7.
Philip Dalton Coppock, B.Sc., M.Sc.Tech., 50, Albany Road, Victoria Park, Manchester.
Benjamin John Corder, Rev., B.A., The Rectory, Radnage, High Wycombe.
Herbert England, 22, Queens Road, Harrogate.
Robert Railton Fitzgerald, 68, Bath Row, Birmingham.
Horace Leonard Gerry, Lyndale, Queen's Park, Chester.
Thomas Joseph Glover, M.Sc., Ph.D., 40, Curzon Street, South Circular Road, Dublin.
Mariam Puthenparampil Gommen, B.A., 59, Tregunter Road, West Brompton, S.W. 10.
Charles Robert Harington, M.A., Ph.D., 2, The Greenway, Gerrard's Cross.
Edgar Albert Hayman, 100, Doyle Gardens, Harlesden, N.W. 10.
Herbert Richard Hussey, 31, Thornbury Avenue, Southampton.
John William Thomas Jones, A.R.C.S., 112, Gaskarth Road, S.W. 12.
Reginald Benjamin King, B.Sc., 52, Mostyn Road, Merton Park, S.W. 19.
Zenjiro Kitasato, D.Sc., Chemical Department, The University, Manchester.
Frederic Goronwy Kny-Jones, B.Sc., 1, Linley Road, Bruce Grove, N. 17.
John McBride, Uzina Sinimbri, São Miguel de Campos, Alagôas, Brazil.
James Younger Macdonald, B.A., 17, Learmonth Gardens, Edinburgh.
James Eric McNeil, B.Sc., Claremont, Lake Road East, Cardiff.
David Owen Meredith, P.O. Box AA-B, Hobart, Tasmania.
Shinzo Murakami, Chemical Department, The University, Manchester.
Ryuzaburo Nodzu, D.Sc., Chemical Department, The University, Manchester.
Gordon Perrins, The Royal Infirmary, Edinburgh.
Mata Prasad, D.Sc., Royal Institute of Science, Bombay.
Walter Desmond Raymond, B.Sc., Chemical Laboratory, Baghdad.
Albert Ernest Robinson, 14, Brentwood Terrace, Armley, Leeds.
William Dallas Scott, A.R.C.S., Eldercroft, Cassio Road, Watford.
Ian Campbell Somerville, B.Sc., Ph.D., 319, Ryers Avenue, Cheltenham, Pa., U.S.A.
Robert Walton, The Mill House, Langford, Maldon, Essex.

Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

Paul Nicholas Leech, A.B., Sc.M., Ph.D., 1513, Asbury Avenue, Winnetka, Ill., U.S.A.
Otto Ruff, Dr.Phil., Dr.Ing., Borsigstrasse 23, Breslau, Germany.

The following papers were read:

"Studies of dynamic isomerism. Part XXIV. Neutral salt action in mutarotation." By T. M. LOWRY and G. F. SMITH.

"Studies of dynamic isomerism. Part XXV. The mechanism of catalysis by acids and bases." By T. M. LOWRY.

"10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part V. The general method of synthesis and determination of constitution." By C. S. GIBSON and J. D. A. JOHNSON.

"On active nitrogen. Part IV. The independence of the afterglow and chemical properties of active nitrogen." By E. J. B. WILLEY.

LECTURE.

Professor W. A. Bone's lecture entitled "Gaseous Combustion at High Pressures" will be delivered in the Rooms of the Society on Thursday, November 24th, 1927, at 8 p.m.

Owing to limited accommodation only Fellows will be admitted.

ANNUAL REPORTS.

The price of the Annual Reports for 1927, Volume XXIV, will be 5*s.* 6*d.* to those Fellows who apply by Christmas Day, 1927. Application should be made to the Assistant Secretary, and must be accompanied by a remittance.

RESEARCH FUND.

A meeting of the Research Fund Committee will be held in December next. Applications for Grants, to be made on forms obtainable from the Assistant Secretary, must be received on or before Thursday, December 1st, 1927. Applications from Fellows will receive prior consideration.

All persons who received Grants in December, 1926, or in December of any previous year, whose accounts have not been closed by the Council, are reminded that Reports must be returned by December 1st.

ERRATUM.

Proceedings 1927, p. 70, line 8 from bottom, *for* "timorously" *read* "timeously."

List of Papers, or Abstracts thereof, received between June 16th and October 20th, 1927. (This List does not include the titles of

papers which have been read at an Ordinary Scientific Meeting or which have appeared in the Journal.)

"Bis-semidine inversion in aromatic dihydrazo-compounds." By P. C. Guha and H. K. Banerjee.

"The composition of bleaching powder. Part I." By E. A. O'Connor.

"A contribution to the stereochemistry of tervalent nitrogen." By J. G. Jackson and J. Kenner.

"The influence of alkalis on the coagulation of silica and clay suspensions." By H. B. Oakley.

"The absorption spectra of various alkaloids and their salicylates and of other derivatives of salicylic acid." By J. E. Purvis.

"The halogenation of *p*-hydroxydiphenylamine. Part II." By A. E. Bradfield, L. H. N. Cooper, and K. J. P. Orton.

"The chemistry of the glutaconic acids. Part XXII. Synthesis of Δ^2-tetrahydro*iso*phthalic acid." By W. M. Duffin, E. H. Farmer, and H. L. Richardson.

"The active agent in aqueous bromination." By A. W. Francis.

"A study of the anomalous rotatory dispersion of configuratively related compounds." By C. E. Wood and S. D. Nicholas.

"Anomalous rotatory dispersion from the standpoint of the Drude equation." By C. E. Wood and S. D. Nicholas.

"Rotatory dispersion. Intersections of dispersion curves and of temperature rotation curves." By C. E. Wood and S. D. Nicholas.

"The rotatory dispersion of optically active co-ordination compounds." By C. E. Wood and S. D. Nicholas.

"Some molecular compounds of copper and nickel salicylates." By W. E. Hamer.

"A comparison of the reaction of chromyl chloride with various substituted toluenes." By J. B. Shoesmith, R. J. Connor, and A. C. Hetherington.

"Varying valency of platinum with respect to mercaptanic radicals. Part V. Tervalency and quinquevalency of platinum." By P. C. Rây.

"Beryllium dialkyls." By H. Gilman and F. Schulze.

"Hydration of cyclic compounds under pressure in presence of osmium and other catalysing agents (catalysers)." By V. S. Sadikov and A. K. Mikhailov.

"The critical temperature of boron trichloride and silicon tetrachloride." By T. W. Parker and P. L. Robinson.

"Organic derivatives of silicon. Part XXXIII. An amorphous variety of octaphenyl*cyclo*silicotetrane." By F. S. Kipping.

"Organic derivatives of silicon. Part XXXIV. The action of sodium on diphenylphenoxysilicyl chloride." By F. S. Kipping.

"Organic derivatives of silicon. Part XXXV. The preparation of diphenylsilicon dichloride: Grignard ether and its action on silicon tetrachloride." By F. S. Kipping and A. G. Murray.

"The dichromate reaction as a method for the quantitative estimation of certain aliphatic and aromatic substances." By H. Ark.

"An examination of a method of estimating the iron and sulphur in compounds of these elements." By P. L. Robinson, L. A. Sayce, and J. Stevenson.

"The reaction between monohydrated ferric oxide and hydrogen sulphide at 100°." By T. G. Pearson and P. L. Robinson.

"A simple form of automatic syphon." By D. C. Harrison.

"The hydrolysis of solutions of sodium palmitate as measured by extraction with *p*-xylene." By J. W. McBain and R. Buckingham.

"The effect of electrolytes upon the viscosity of solutions of sodium palmitate." By J. W. McBain, H. J. Willavoys, and H. Heighington.

"On a new series of double sulphates of the copper–magnesium group and the sulphonium bases. Part II." By P. C. Rây and N. Rây.

"The action of potassium cyanide upon chloral." By F. D. Chattaway.

"The condensation of *o*-aminothiophenol with $\alpha\beta$-unsaturated acids." By W. H. Mills and J. B. Whitworth.

"The interaction of chloral and aryl hydrazines." By F. D. Chattaway and R. Bennett.

"The alkylation of α-cyano-β-alkylacrylic esters and of α-phenyl-β-alkylacrylic nitriles." By J. A. McRae and R. H. F. Manske.

"Substitution products of 3-nitro- and 3-amino-diphenyl." By W. Blakey and H. A. Scarborough.

"The complex salts of nickel with various aliphatic diamines." By F. G. Mann.

"Substitution products of 4-hydroxybenzophenone and of its methyl ether." By W. Blakey, W. I. Jones, and H. A. Scarborough.

"Molecular structure in solution. Part III. The electrical conductivities of aqueous solutions of cobalt chloride and hydrochloric acid." By O. R. Howell.

"The electroendosmosis of aqueous solutions through glass diaphragms." By H. C. Hepburn.

"The orienting influence of free and bound ionic charges on attached simple or conjugated unsaturated systems. Part II. The nitration of 1-benzylpiperidine and of some related substances." By A. Pollard and R. Robinson.

"Aromatic thionyl and chlorothionyl derivatives. Part III. Some reactions of thionylalizarin." By A. Green.

"On the conjugated trialkyl sulphonium double sulphates of the copper–magnesium group." By P. C. Rây and N. N. Rây.

"Substituted diaryl ethers. Part II. The Friedel and Crafts reaction applied to di-*p*-tolyl ether." By J. Reilly and P. J. Drumm.

"The union of benzoylacetonitrile with organic bases in the presence of salicylaldehyde. Part II." By P. Krishnamurti.

"A note on the thermal dissociation of strontium carbonate." By E. O. Jones and M. L. Becker.

"Halogenation of phenols. Part II. Iodination." By F. G. Soper and G. F. Smith.

"The orienting influence of free and bound ionic charges on attached simple or conjugated unsaturated systems. Part III. The nitration of benzyl-*m*-nitrophenylsulphone." By B. Chatterjee and R. Robinson.

"The orienting influence of free and bound ionic charges on attached simple or conjugated unsaturated systems. Part IV. The nitration of ω-toluenesulphonic acid and of ω-toluenesulphonyl chloride." By A. C. Bottomley and R. Robinson.

"7-Hydroxy-3-phenylcoumarin." By W. Baker.

"The activity theory of reaction velocity. The interaction of *N*-chloroacetanilide and hydrochloric acid." By F. G. Soper and D. R. Pryde.

"The isomerism of the oximes. Part XXXII. Hydrosulphates." By O. L. Brady and A. D. Whitehead.

"A new synthesis of hydrastic acid." By T. S. Stevens and M. C. Robertson.

"The preparation of triacetonamine-hydrate." By F. FRANCIS.

"The condensation of certain β-ketonic esters with *o*-hydroxymonostyryl ketones." By R. HILL.

"Studies in the sterol group. Part I. The effect of heat on cholesterol and the structure of cholesterilene." By I. M. HEILBRON and W. A. SEXTON.

"Studies in the sterol group. Part II. The absorption spectra of some cholesterol derivatives." By I. M. HEILBRON, R. A. MORTON, and W. A. SEXTON.

"A simple method of finding the true shape and dimensions of a gas molecule at normal temperature and pressure." By A. SKINNER.

"The reactions between oxygen and coal." By W. FRANCIS and R. V. WHEELER.

"A note on Pregl's universal filling applied to combustions on a macro-scale." By W. DAVIES.

"A comparison of the activating effect of the nitro, sulphonic acid, and carboxylic acid groups." By W. DAVIES and E. S. WOOD.

"The formation of organic periodic structures." By M. COPISAROW.

"An *X*-ray examination of saturated dicarboxylic acids and amides of the fatty acid series." By E. HENDERSON.

"A general method for the preparation of carbocyanine dyes." By F. M. HAMER.

"The chemical nature of precipitated basic cupric carbonate." By J. R. I. HEPBURN.

"Investigations on the reactivity of halogens in various types of naphthalene derivatives. Part I." By J. B. SHOESMITH and H. RUBLI.

"The sulphonation of glyoxalines. Part III." By G. R. BARNES and F. L. PYMAN.

"Quaternary salts in the benzoselenazole series." By L. M. CLARK.

"A double compound of chromic and hydrogen chlorides." By J. R. PARTINGTON and S. K. TWEEDY.

"The viscosities of chromic anhydride solutions." By J. R. PARTINGTON and S. K. TWEEDY.

"Some effects of the distribution of current density over an electrode." By E. S. HEDGES.

"Properties of conjugated compounds. Part III. The bearing of hexatriene chemistry on the reactive form of conjugated hydrocarbons." By E. H. FARMER, B. D. LAROIA, T. M. SWITZ, and J. F. THORPE.

"The dimorphism of 2-chloro-4-acetamidotoluene." By M. SCHOFIELD.

"Investigations on the reactivity of halogens in various types of naphthalene derivatives. Part II." By J. B. SHOESMITH and H. RUBLI.

"The mechanism of the formation of citric and oxalic acids from sugars by *Aspergillus niger*." By T. K. WALKER, V. SUBRAMANIAM, and F. CHALLENGER.

"The acetylation of cellulose." By H. J. P. VENN.

"Reduction of nitrites, nitrates, and nitric acid with magnesium amalgam—a new method of preparing hyponitrites and preparation of some new hyponitrites." By P. NEOGI and B. L. NANDI.

"The Reimer–Tiemann reaction with *m*-bromo- and *m*-iodo-phenol." By H. H. HODGSON and T. A. JENKINSON.

"The action of tolylhydrazines upon dihydroxytartaric acid." By F. D. CHATTAWAY and W. G. HUMPHREY.

"Syntheses in the indole series. Part II. 5 : 6-Benzo-4-carboline and its derivatives." By W. O. KERMACK and R. H. SLATER.

"A new stereoisomeride (*trans*-) of hexahydrocarbazole." By J. Gurney, W. H. Perkin, and S. G. P. Plant.

"A physico-chemical study of lactones derived from simple sugars." By S. R. Carter, W. N. Haworth, and R. A. Robinson.

"The constitution of the disaccharides. Part XVI. Cellobiose." By W. N. Haworth, C. W. Long, and J. H. G. Plant.

"Equilibrium in the system $CuSO_4$–Na_2SO_4–H_2O at 0°, 25°, and 37·5°. A correction." By R. M. Caven and W. Johnston.

"The complex cyanides of molybdenum." By W. R. Bucknall and W. Wardlaw.

"The parachor and chemical constitution. Part VI. Some cases of supposed ring-chain tautomerism." By F. B. Garner and S. Sugden.

"The polymerides of some diaryl-ψ-thiohydantoins and of some 2 : 4-diaryltetrahydro-1 : 2 : 4-thiodiazole derivatives." By R. F. Hunter and H. Morland.

"Studies of valency. Part VIII. Extinction coefficients and molecular conductivities of Vernon's isomeric α- and β-dimethyltelluronium salts. The molecular structure of quadrivalent tellurium compounds." By T. M. Lowry, R. R. Goldstein, and F. L. Gilbert.

"The isomerism of the oximes. Part XXXIII. The oximes of opianic acid and of phthalic anhydride." By O. L. Brady, L. C. Baker, R. F. Goldstein, and S. Harris.

"The colouring matters of Carajura." By E. Chapman, A. G. Perkin, and R. Robinson.

"Trypanocidal action and chemical constitution. Part VII. *s*-Carbamides and arylamines of naphthylamine di- and tri-sulphonic acids with some observations on the mesomorphic state." By I. E. Balaban and H. King.

"The preparation of mono- and di-nitro-derivatives of benzil." By F. D. Chattaway and E. A. Coulson.

"Studies in colour and constitution. Part II. Further group influences on the colours of azo-dyes." By H. H. Hodgson and F. W. Handley.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

(a) *From Lady Ramsay.*

Arrhenius, Svante. Theorien der Chemie. Translated by Alexis Finkelstein. Leipzig 1906. pp. vii + 177. ill.

—— Das Werden der Welten. Translated by L. Bamberger. Leipzig 1907. pp. vi + 208. ill.

Le Chatelier, Henry. La silice et les silicates. Paris 1914. pp. iv + 574. ill.

Mendeléeff, Dmitri [Ivanovich]. Grundlagen der Chemie. Translated by L. Jawein and A. Thillot. St. Petersburg 1891. pp. iv + 1126. ill.

Moissan, Henri. Recherches sur l'isolment du fluor. Paris 1887.

—— Le four électrique. Paris 1897. pp. viii + 386. ill.

RIGHI, AUGUSTO. La moderna teoria dei fenomeni fisici (radioattività, ioni, elettroni). 3rd edition. Bologna 1907. pp. xii + 290. ill.

(b) *From Mr. Arnold Stevenson.*

CLIFTON, E., and GRIMAUX, A. Nouveau dictionnaire Anglais-Français et Français-Anglais. New edition. By J. MCLAUGHLIN. Paris [1914]—1923. pp. xxiv + 1237, xviii + 1341. (*Reference.*)

HOARE, ALFRED. An Italian dictionary. Cambridge 1925. pp. xxxii + 906. (*Reference.*)

KRAMERS' Engelsch woordenboek: Engelsch-Nederlandsch en Nederlandsch-Engelsch. 10th edition. By F. P. H. PRICK VAN WELY. Gouda 1926. pp. viii + 1260. ill. (*Reference.*)

ROSHDESTVENSKY, A. P., and SHAPIRO, A. M. Hill's modern pronouncing dictionary of the English and Russian languages. 2 vols. London 1919. pp. vi + 532, viii + 682. (*Reference.*)

(c) *Miscellaneous.*

ABDERHALDEN, EMIL. Handbuch der biologischen Arbeitsmethoden. Abt. I. Chemische Methoden, Teil 2, 1 Hälfte, Hefte iii and iv. Berlin 1927. pp. 643 to 1138. *M.* 28. (*Recd.* 9/9/27.)

—— —— —— Teil 3, 1 Hälfte, Heft ii. Berlin 1927. pp. 457 to 642. *M.* 10. (*Recd.* 6/8/27.)

—— —— Abt. XI. Chemische, physikalische und physikalisch-chemische Methoden zur Untersuchung des Bodens und der Pflanze, Teil 3, Heft vi. Berlin 1927. pp. 865 to 997. *M.* 7. (*Recd.* 13/10/27.)

From the Publishers: Herren Urban & Schwarzenberg.

ARNALL, FRANCIS, and HODGES, FRANCIS WILLIAM. Theoretical organic chemistry. Part II. London 1927. pp. x + 330. ill. 10*s.* 6*d.* net. (*Recd.* 31/8/27.) From the Authors.

BÖHM, E., and DIETRICH, K. R. Reagenzien und Nährböden. Eine Zusammenstellung der wichtigsten und zweckmässigsten Vorschriften für die Laboratoriumspraxis. Berlin 1927. pp. vii + 375. (*Reference.*) *M.* 18.

From the Publishers: Herren Urban & Schwarzenberg.

CAVEN, ROBERT MARTIN. The foundations of chemical theory. 2nd edition. London 1926. pp. xii + 320. ill. 12*s.* 6*d.* net. (*Recd.* 15/8/27.) From the Author.

HANDBUCH DER ANORGANISCHEN CHEMIE. Edited by RICHARD ABEGG, FRIEDRICH AUERBACH, and IWAN KOPPEL. Vol. IV. Part 1. i. pp. xii + 966. ill. (*Reference.*) *M.* 60.

From the Publisher: Herr S. Hirzel.

INSTITUTION OF PETROLEUM TECHNOLOGISTS. Journal. Decen-

nial index, Vols. I–X, 1914—1924. London 1926. pp. 116. (*Reference.*) 7*s.* 6*d.* net. From the Institution.

Jugoslovenskog Hemijskog Društva. *Sekcije Zagreb.* Arhiv za Hemiju i Farmaciju. Vol. I, etc. Zagreb 1927 +. (*Reference.*) From the Society.

Kausch, Oscar. Das Kieselsäuregel und die Bleicherden. Berlin 1927. pp. iv + 292. ill. *M.* 29. (*Recd.* 15/7/27.) From the Publisher: Herr Julius Springer.

Kruyt, Hugo Rudolph, and Klooster, Henry S. van. Colloids: a textbook. New York 1927. pp. xii + 262. ill. 17*s.* 6*d.* net. (*Recd.* 8/9/27.) From the London Publishers: Messrs. Chapman & Hall.

Lewis, Ernest Isaac, and King, George. The making of a chemical: a guide to works practice. London 1927. pp. 288. ill. 12*s.* 6*d.* net. (*Recd.* 11/7/27.) From the Publishers: Messrs. Ernest Benn.

Lowry, Thomas Martin, and Russell, Sir [Edward] John. The scientific work of the late Spencer Pickering, F.R.S. With a biographical notice by Arthur Harden. London 1927. pp. x + 248. ill. 4*s.* net. (*Recd.* 2/9/27.) From the Lawes Agricultural Trust.

Marsh, James Ernest. Stone decay and its prevention. Oxford 1926. pp. vi + 58. ill. 3*s.* 6*d.* net. (*Recd.* 15/8/27.) From the Author.

Mookerji, Bhudeb. Rasa-jala-nidhi, or, Ocean of Indian chemistry and alchemy. Vol. I. Calcutta [1926]. pp. xxiv +356. 15*s.* net. From the Author.

Pickering, Spencer. *See* Lowry, Thomas Martin.

Simpkin, Neville, and Sinnatt, Frank Sturdy. Coal and allied subjects: a compendium of bulletins 10 to 16 issued by the Lancashire and Cheshire Coal Research Association [1922—1925.] London [1926]. pp. viii + [176]. ill. 15*s.* net. (*Recd.* 2/9/27.) From the Association.

Society of Chemical Industry, Japan. Journal. (Kōgyō Kwakaku Zasshi.) Supplemental binding. Vol. XXX, etc. Tokyo 1927 +. From the Society.

Spencer, James Frederick. Elementary practical physical chemistry. pp. viii + 264. ill. 5*s.* net. (*Recd.* 6/9/27.) From the Author.

Spielmann, Percy Edwin. Chemistry. London 1927. pp. 80. 6*d.* net. From the Publishers: Messrs. Ernest Benn.

Sulfrian, Albert. Lehrbuch der chemisch-technischen Wirtschaftslehre. Stuttgart 1927. pp. x + 283. *M.* 16.50. (*Recd.* 10/10/27.) From the Publisher: Herr Ferdinand Enke.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. VI. Part v. Berlin 1927. pp. 961 to 1200. *M.* 10. (*Recd.* 21/9/27.)
From the Publishers: Herren Urban & Schwarzenberg.

UNIVERSITY OF MINNESOTA. Collected research papers from the Division of Agricultural Biochemistry. Vol. I, 1923—26. St. Paul 1927. (*Reference.*) From Professor R. A. Gortner.

VÈZES, MAURICE. Leçons de chimie physique. Paris 1927. pp. x + 546. ill. 50 *fr.* (*Recd.* 7/7/27.)
From the Publishers: Librairie Vuibert.

II. *By Purchase.*

FOOD MANUFACTURE: the journal of the food industry. Vol. I, etc. London 1927 +. ill. (*Reference.*)

HANDBUCH DER PHYSIK. Edited by HANS GEIGER and KARL SCHEEL. Vol. I. Geschichte der Physik. Vorlesungstechnik. Edited by KARL SCHEEL. Berlin 1926. pp. vii + 404. ill. *M.* 33.60. (*Recd.* 19/7/27.)

—— —— Vol. II. Elementare Einheiten und ihre Messung. Edited by KARL SCHEEL. Berlin 1926. pp. viii + 522. ill. *M.* 42. (*Recd.* 19/7/27.)

—— —— Vol. V. Grundlagen der Mechanik. Mechanik der Punkte und starren Körper. Edited by RICHARD GRAMMEL. Berlin 1927. pp. xiv + 623. ill. *M.* 54. (*Recd.* 2/9/27.)

—— —— Vol. VII. Mechanik der flüssigen und gasförmigen Körper. Edited by RICHARD GRAMMEL. Berlin 1927. pp. xi + 413. ill. *M.* 36.60. (*Recd.* 19/7/27.)

—— —— Vol. VIII. Akustik. Edited by FERDINAND TRENDELENBURG. Berlin 1927. pp. x + 712. ill. *M.* 60.90. (*Recd.* 2/9/27.)

—— —— Vol. IX. Theorien der Wärme. Edited by FRITZ HENNING. Berlin 1926. pp. viii + 616. ill. *M.* 49.20. (*Recd.* 19/7/27.)

—— —— Vol. XI. Anwendung der Thermodynamik. Edited by FRITZ HENNING. Berlin 1926. pp. vii + 454. ill. *M.* 37.20. (*Recd.* 19/7/27.)

—— —— Vol. XIV. Elektrizitätsbewegung in Gasen. Edited by WILHELM WESTPHAL. Berlin 1927. pp. vii + 444. ill. *M.* 38.10. (*Recd.* 19/7/27.)

—— —— Vol. XV. Magnetismus. Elektromagnetisches Feld. Edited by WILHELM WESTPHAL. Berlin 1927. pp. vii + 532. ill. *M.* 45.60. (*Recd.* 19/7/27.)

—— —— Vol. XVI. Apparate und Messmethoden für Elek

trizität und Magnetismus. Edited by WILHELM WESTPHAL. Berlin 1927. pp. ix + 801. ill. *M.* 68.40. (*Recd.* 2/9/27.)

HANDBUCH DER PHYSIK. Vol. XVII. Elektrotechnik. Edited by WILHELM WESTPHAL. Berlin 1926. pp. vii + 392. ill. *M.* 33.60. (*Recd.* 19/7/27.)

—— —— Vol. XVIII. Geometrische Optik. Optische Konstante. Optische Instrumente. Edited by HEINRICH KONEN. Berlin 1927. pp. xx + 865. ill. *M.* 74.40. (*Recd.* 3/10/27.)

—— —— Vol. XXII. Elektronen, Atome, Moleküle. Edited by HANS GEIGER. Berlin 1926. pp. vii + 568. ill. *M.* 44.70. (*Recd.* 19/7/27.)

—— —— Vol. XXIII. Quanten. Edited by HANS GEIGER. Berlin 1926. pp. x + 782. ill. *M.* 59.70. (*Recd.* 19/7/27.)

—— —— Vol. XXIV. Negative und positive Strahlen. Zusammenhängende Materie. Edited by HANS GEIGER. Berlin 1927. pp. xi + 604. ill. *M.* 51.60. (*Recd.* 19/7/27.)

HOWE, HARRISON E., and TURNER, FRANCIS MILLS. Chemistry and the home. New York 1927. pp. xii + 356. 7*s.* 6*d.* net. (*Recd.* 22/9/27.)

LANDOLT, HANS HEINRICH, and BÖRNSTEIN, RICHARD. Physikalischchemische Tabellen. 5th edition. Erster Ergänzungsband. Edited by WALTHER ADOLF ROTH and KARL SCHEEL. Berlin 1927. pp. x + 919. ill. (*Reference.*) *M.* 114.

NAPHTALI, MAX. Chemie, Technologie und Analyse der Naphthensäuren. Stuttgart 1927. pp. 144. *M.* 14. (*Recd.* 30/6/27.)

PFEIFFER, PAUL. Organische Molekülverbindungen. 2nd edition. (Chemie in Einzeldarstellungen, Vol. XI.) Stuttgart 1927. pp. xvii + 470. *M.* 42.20. (*Recd.* 30/6/27.)

PHYSICAL SOCIETY OF LONDON. Report on series in line spectra. By ALFRED FOWLER. London 1922, reprinted 1927. pp. viii + 184. ill. 14*s.* 6*d.* net. (*Recd.* 14/10/27.)

REMY, HEINRICH. Die elektrolytische Wasserüberführung und ihre Bedeutung für die Theorie der wässerigen Lösungen. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XIX.) Berlin 1927.

UNITED STATES. *Department of Commerce.* Bureau of Standards. Standards Yearbook 1927. Washington 1927. pp. 408. ill. (*Reference.*) 5*s.* 6*d.* net.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, November 3rd, 1927, at 8 p.m., Professor H. Brereton Baker, C.B.E., D.Sc., F.R.S., President, in the Chair.

The President referred to the loss sustained by the Society, through death on October 10th, of Mr. A. C. P. Lunn, who was elected a Fellow on May 4th, 1922.

It was announced that Professor C. S. Gibson, Dr. J. T. Hewitt, Professor G. T. Morgan, and Professor J. F. Thorpe had been reappointed by the Council to represent the Society on the Bureau of Chemical Abstracts for the year 1927—1928, and that Professor A. J. Allmand, Professor F. G. Donnan, and Dr. T. Slater Price would represent the Society on the Editorial Board of the "Journal of Physical Chemistry," together with Dr. E. K. Rideal, the representative of the Faraday Society.

The following were formally admitted Fellows of the Chemical Society: G. E. Thompson, J. Muir Smith, R. A. B. Tapley, W. L. Lee-Smith, J. Wilson, and L. V. D. Scorah.

Certificates were read for the first time in favour of:

William Ernest Cooper, 105, Park Road, Warley Woods, Birmingham.
Eustace Nevill Eccott, B.Sc., A.R.C.S., Crofton Acre, Orpington.
Barnett Levin, B.Sc., 64, Pooles Park, N. 4.
Ronald Henry Linsell, B.Sc., Bethary House School, Goudhurst.
Moolraj Mehrotra, M.Sc., 112, Gower Street, W.C. 1.
Thomas Mitchell, B.Sc., A.R.C.S., 2, Tufton Street, Silsden, Keighley.
William Emrys Pride, B.Sc., A.R.C.S., Imperial College Hostel, S. Kensington, S.W. 7.
Ralph David Satchell, B.Sc., A.R.C.S., 26, Wilson Street, S.W. 11.
Arthur Harold Stevens, B.Sc., Tower House, Wokingham Road, Reading.
Horatio Todd, Bromleigh, Sandown Road, Knock, Belfast.
Frank Louis Warren, B.Sc., A.R.C.S., 5, Maitland Park Villas, Hampstead, N.W. 3.
Marjorie Jennet Wilson-Smith, B.Sc., 90, Queen Alexandra Mansions, Judd Street, W.C. 1.

Dr. J. L. Simonsen and Dr. C. R. Young were appointed Scrutators, and a ballot for the election of Sir Joseph John Thomson, O.M., F.R.S., Master of Trinity College, Cambridge, as an Honorary Fellow was held. Sir J. J. Thomson was subsequently declared duly elected.

The following papers were read :

"The complex salts of nickel with various aliphatic diamines." By F. G. MANN.

"The mechanism of the formation of citric and oxalic acids from sugars by *Aspergillus niger*." By T. K. WALKER, V. SUBRAMANIAM, and F. CHALLENGER.

"The complex cyanides of molybdenum." By W. R. BUCKNALL and W. WARDLAW.

"The parachor and chemical constitution. Part VI. Some cases of supposed ring-chain tautomerism." By F. B. GARNER and S. SUGDEN.

"The colouring matters of *Carajura*." By E. CHAPMAN, A. G. PERKIN, and R. ROBINSON.

Ordinary Scientific Meeting, Thursday, November 17th, 1927, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc. F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death on March 9th, of Professor Albert William Smith, who was elected a Fellow on May 4th, 1922.

Certificates were read for the first time in favour of :

Jacob Davis Cohen, B.Sc., A.C.G.F.C., 24, Alconbury Road, Clapton, E. 5.
Geoffrey William Fenton, B.Sc., 7, St. John's Avenue, Newcome, Huddersfield.
James Flint, M.C., 82, Sunny Gardens, Hendon, N.W. 4.
Charles Frederick Goodeve, M.Sc., University College Hall, Ealing, W. 5.
Marion Gosset, B.Sc., A.R.C.S., 17, Queen Anne's Grove, Bedford Park, W. 4.
Leslie George Groves, B.Sc., 22, Chadway, Chadwell Heath, Essex.
Herbert Charles Gull, B.Sc., 26, Twyford Road, Ilford.
Donald Holroyde Hey, B.Sc., 14, Grosvenor Road, Sketty, Swansea.
Theodora Mary Holmes, B.Sc., A.R.C.S., 24, Clifton Gardens, W. 9.
Robert Gilbert James, B.Sc., A.I.C., 25, Staplehall Road, Northfield, Birmingham.
Alfred William Leonard, B.Sc., 72, Hatherley Gardens, East Ham, E. 6.
Arthur Bertram Edmund Lovett, B.Sc., 4, Prior Street, Greenwich, S.E. 10.
Alfred Pollard, B.Sc., Hulme Hall, Victoria Park, Manchester.
John Taylor, B.Sc., 120, Hurlingham Road, Fulham, S.W. 6.
David Matthew Williams, B.Sc., Ph.D., Cranbrooke, Bridge Street, Aberystwyth.

The following papers were read :

" Differential potentiometric titration. Part I. Simple method." By B. CAVANAGH.

" Differential potentiometric titration. Part II. Refined method." By B. CAVANAGH.

" A general method for the preparation of carbocyanine dyes." By F. M. HAMER.

" A comparison of analogous organic compounds of phosphorus and arsenic." By C. S. GIBSON and J. D. A. JOHNSON.

" Derivatives of methyl 2 : 2-dimethyl*cyclo*pentan-3-one-1-carboxylate." By C. S. GIBSON, K. V. HARIHARAN, and J. L. SIMONSEN.

IMPORTANT NOTICE.

Ordinary Scientific Meeting, December 15th, 1927.

It has been decided to abandon the Ordinary Scientific Meeting arranged for December 15th, 1927, in view of the Jubilee Dinner of the Institute of Chemistry being held that evening.

List of Papers, or Abstracts thereof, received between October 20th and November 17th, 1927. (This List does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

" The ternary systems : copper acetate–acetic acid–water and lead acetate–acetic acid–water at 25°." By K. SANDVED.

" A method of estimating traces of zinc in solution (other metals being absent)." By R. PIRRET.

" The photochemical decomposition of nitrous oxide and nitric oxide." By J. Y. MACDONALD.

" Investigation of the constitution of glycerides in natural fats. A preliminary outline of two new methods." By T. P. HILDITCH and C. H. LEA.

" The interaction of bromine with acetic anhydride. Part III. Arrest of the reaction. A comparison with the bromination of acetone." By H. B. WATSON.

" Some observations on the chlorination products of ββ′-dichlorodiethyl sulphide." By S. A. MUMFORD and J. W. C. PHILLIPS.

" The oxide-ring structure of normal and γ-derivatives of mannose. Preparation and oxidation of derivatives of γ-mannonolactone and δ-mannonolactone." By E. H. GOODYEAR and W. N. HAWORTH.

"The effect of the constitution of a chloroamine on its hydrolysis constant." By F. G. Soper and G. F. Smith.

"The use of hydrogen peroxide in iodine and other substitutions." By J. E. Marsh.

"The reactivity of the double bond in coumarins and related αβ-unsaturated carbonyl compounds. Part I. Addition of cyanacetamide to coumarins." By T. R. Seshadri.

"The nature of the alternating effect in carbon chains. Part XXII. An attempt further to define the probable mechanism of orientation in aromatic substitution." By C. K. Ingold and F. R. Shaw.

"Nitration of diacetyl-*o*-phenylenediamine." By M. A. Phillips.

"The formation of 2-methylbenziminazoles." By M. A. Phillips.

"The influence of glass upon the vapour pressure." By J. Rinse.

"Action of cuprous hydride on diazonium salts—a combined Sandmeyer–Gattermann reaction." By P. Neogi and A. K. Mitra.

"The inflammation of mixtures of (*a*) carbon monoxide and air, (*b*) hydrogen and air in a closed spherical vessel." By G. B. Maxwell and R. V. Wheeler.

"On the heat of adsorption of oxygen on charcoal." By A. F. H. Ward and E. K. Rideal.

"The laws of aromatic substitution. Part VI. The constitution and substitution of phenylnitromethane and some derivatives." By B. Flürscheim and E. L. Holmes.

"The laws of aromatic substitution. Part VII. A quantitative method for rapid determinations of isomeric nitro-derivatives of laterally substituted toluenes." By B. Flürscheim and E. L. Holmes.

"Researches in residual affinity and co-ordination. Part XXX. Complex ethylenethiocarbamide salts of univalent and bivalent metals." By G. T. Morgan and F. H. Burstall.

"Optical activity and the polarity of substituent groups. Part VII. *sec.*-β-Octyl esters of *o*-, *m*-, and *p*-substituted benzoic acids." By H. G. Rule, W. Hay, A. H. Numbers, and T. R. Paterson.

"A cyclic semipinacolin." By J. W. Cook.

"Activation of extended conjugated systems. A reply." By J. W. Baker and I. S. Wilson.

"On an auto-poisoning phenomenon shown by catalytically active copper at moderate temperatures." By F. H. Constable.

"The condensation of glyoxalines with formaldehyde." By R. Grindley and F. L. Pyman.

"Glyoxaline-4(5)-formaldehyde." By W. HUBBALL and F. L. PYMAN.

"Orientation effects in the diphenyl series. Part V. The independence of the two nuclei in diphenyl compounds as evidenced by substitution and reactivity effects." By R. J. W. LE FÈVRE and E. E. TURNER.

"Action of Beckmann's chromic acid mixture on some monocyclic terpenes." By T. A. HENRY and H. PAGET.

"Applications of thallium compounds in organic chemistry. Part IV. Thallium compounds of polyhydroxy-compounds." By R. C. MENZIES and M. E. KIESER.

"Density and refractivity of dilute manganese salt solutions." By A. N. CAMPBELL.

"Studies of dynamic isomerism. Part XXVI. Consecutive changes in the mutarotation of galactose." By G. F. SMITH and T. M. LOWRY.

"Triazole compounds. Part II. Methylation of some 1-hydroxy-1 : 2 : 3-benztriazoles." By O. L. BRADY and C. V. REYNOLDS.

"Campnospermonol, a ketonic phenol from *Campnospermum brevipetiolatum*." By T. G. H. JONES and F. B. SMITH.

"Cyclic organo-metallic compounds. Part IV. Tellurylium compounds (*continued*)." By H. D. K. DREW.

"Cyclic organo-metallic compounds. Part V. Phenoxselenine and phenoxthionine from phenoxtellurine. Selenylium and thionylium compounds." By H. D. K. DREW.

"Stereoisomerism of disulphoxides and related substances. Part II. Derivatives of 1 : 4-dithian." By E. V. BELL and G. M. BENNETT.

"The velocity coefficient for bimolecular reactions in solution." By R. G. W. NORRISH and F. F. P. SMITH.

"The constitution of the disaccharides. Part XVIII. Maltose and melibiose." By W. N. HAWORTH, J. V. LOACH, and C. W. LONG.

"The hydrogen-ion concentration of aqueous iodine solutions." By H. M. DAWSON.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, DECEMBER 1st, 1927.

BIRKS, STANLEY, The Limes, High View Av., Grays, Essex. British. Science Master. 2nd Class Honours School Natural Science (Chemistry),

Oxford. Teacher of Chemistry at Palmer's School, Grays, Essex (Sept. 1922). (*Signed by*) H. J. George, D. L. Chapman, M. P. Applebey.

BLYTHE, GEORGE EDWARD KEVIN, "Ael-y-Bryn," 20, Pantygwydr Road, Uplands, Swansea. British. County Lecturer in Electrotechnics to the Glamorgan County Council. Doctor of Philosophy. B.Sc. Lecturer in Chemistry and Scholar Leeds University. Jarrow-on-Tyne Secondary School Honours Diploma, City and Guilds. Fellow Royal Astronomical Society. Fellow of Geological Society. Member Royal Institution of Great Britain. Laureate French Academy of Science. Fellow Société Astronomique de France. Associate American Institute of Electrical Engineers. Graduate Institution of Electrical Engineers (London). Graduate Institution of Structural Engineers (London). "Mineral Oil—Petroleum," "Powdered Fuel," "The Corrosion of Metals," Durham University, February, 1925. (*Signed by*) Julius B. Cohen, Edward John Jones, Arthur M. O'Brien.

CLAY, CHARLES NIGHTINGALE, 81, Cromwell Road, London, S.W. 7. British. Industrial Chemist. B.Sc. (1st Class Honours in Chemistry at University College, London). A.I.C. Wish to receive publications of the Society and to attend the meetings. (*Signed by*) F. A. Freeth, L. W. Codd, F. M. Irvine.

COOPER, WILLIAM ERNEST, 105, Park Rd., Warley Woods, Birmingham. British. Assistant Works Chemist. Five years at Messrs. Guest, Keen & Nettlefolds, Ltd., Birmingham. Studied one year at Birmingham University. Studied four years at Birmingham Municipal Technical School. Student of Inst. of Chemistry. Six years' works technical experience. (*Signed by*) J. Newton Friend, J. Cooper Duff, Wm. Wardlaw.

COPPOCK, PHILIP DALTON, 50, Albany Rd., Victoria Park, Manchester. English. Technical and Research Chemist. B.Sc. Hons. Chem. (Manchester). M.Sc.Tech. (Manchester). Assistant to T. R. Hodgson, M.A., F.I.C., Public Analyst for Blackpool, Wallasey, etc., Jan.–May, 1926, and July, 1927 to date. Evening Demonstrator in Chemistry and Bacteriology of Foodstuffs. Manchester College of Technology, Sept., 1926 to date. (*Signed by*) T. K. Walker, John K. Wood, T. R. Hodgson.

CORDER, BENJAMIN JOHN (Rev.), The Rectory, Radnage, High Wycombe. British. Clerk in Holy Orders. B.A. (Cantab.). Work on Electrochemistry. (*Signed by*) Robert Robertson, Geo. Stubbs, J. J. Fox.

ECCOTT, EUSTACE NEVILL, Crofton Acre, Orpington, Kent. British. Student (Chemistry). B.Sc. (2nd Class Honours, London). A.R.C.S. (*Signed by*) H. B. Baker, M. A. Whiteley, G. A. R. Kon.

ENGLAND, HERBERT, 22, Queen's Road, Harrogate, Yorkshire. British. Chemist Director (Taylor's Drug Co., Ltd.). Chemist and Druggist, Edinburgh. In control of the Company's Laboratory and Dispensaries. I desire to keep abreast with modern scientific literature and development. (*Signed by*) J. Langford Moore, John Rennie, H. Roberts.

FINÁLY, STEPHEN DE, Budapest, Hungary, IX. Lónyay-utra 41. Hungarian. Analytical Chemist of the Royal Hungarian Geological Survey, Budapest. Diploma of Chemical Engineering issued by the Royal Hungarian "Joseph" University of Technical Sciences, Budapest. (*Signed by*) Thos. J. Cheater, William T. Burgess, R. Sutcliffe.

FITZGERALD, ROBERT RAILTON, 68, Bath Row, Birmingham. British Head Brewer. To keep in touch with the latest developments in Biological Chemistry. (*Signed by*) S. H. Green, William Duncan, E. C. Bennison.

GERRY, HORACE LEONARD, Lyndall, Queen's Park, Chester. British. Pharmacist. Member of the Pharmaceutical Society of Great Britain. Has worked for 12½ years on the Chemistry of Soils and Soil Sterilisation for

Horticultural purposes. Is desirous of receiving the Society's Publications and of attending its meetings. (*Signed by*) John Welsh, W. H. Saunders, George Dalrymple.

GLOVER, THOMAS JOSEPH, 40, Curzon St., South Circular Road, Dublin. Irish. Lecturer in Chemistry, Birmingham University. M.Sc. and Ph.D., National University, Ireland. Papers, with Prof. Hugh Ryan, on "Nitro-derivatives of Diphenylamine" (*Proceedings of the Royal Irish Academy*) and, with Prof. G. T. Morgan, on the "Orthochlorodinitrotoluenes" *J.C.S.*, 1921, 1700; 1924, 1597. (*Signed by*) Wm. Wardlaw, W. J. Hickinbottom, H. D. K. Drew.

HARINGTON, CHARLES ROBERT, 2, The Greenway, Gerrards Cross, Bucks. British. Lecturer in Pathological Chemistry, University College Hospital Medical School, London. M.A. (Cantab.), Ph.D. (Edin.). Papers on chemical subjects in the *Biochemical Journal* (including "Constitution and Synthesis of Thyroxine"). (*Signed by*) George Barger, Ellen Stedman, C. P. Stewart.

HAYMAN, EDGAR ALBERT, "Cranleigh," 100, Doyle Gardens, Harlesden, N.W. 10. British. Chemist and Druggist. Member of Pharmaceutical Society. Desirous of attending meetings and to receive the publications of the Society. (*Signed by*) Frank B. Arnold, Percy Barrs, Alfred J. Lennane.

HUSSEY, HERBERT RICHARD, 31, Thornbury Avenue, Southampton. British. Managing Director of Randall & Wilson, Ltd., Manufacturing Chemists, Southampton. My object in being a Fellow is to attend the meetings; also to receive the *Journal* and other publications. (*Signed by*) Fred. W. Fletcher, D. R. Boyd, Herbert J. Hodges.

INGRAM, ALBERT WILLIAM KEMP, "St. Stephens," 261, High Street, Sheerness, Kent. British. B.A. Student at Emmanual College, Camb. Entering Teaching Profession as Chemistry Master. B.A. (Cantab.). Natural Science Tripos, Part I. Reading for Camb. Univ. Diploma in Education, with special endorsement in Science. (*Signed by*) R. G. W. Norrish, F. W. Dootson, C. R. Ward.

JONES, JOHN WILLIAM THOMAS, 112, Gaskarth Road, London, S.W. 12. British. Research Student. A.R.C.S. (*Signed by*) H. B. Baker, Jocelyn Thorpe, M. A. Whiteley, G. A. R. Kon, Philip C. Bull, R. F. Hunter.

KERR, ROBERT NAPIER, 22, St. Bernard's Crescent, Edinburgh. British. University Assistant. B.Sc., Ph.D. (Edinburgh). Assistant in Chemistry, Edinburgh University, 1926–27. Carnegie Research Scholar, 1925–26. *J.C.S.*, 1926, 2796; *Phil. Mag.*, 1927, 330. (*Signed by*) James Walker, H. Gordon Rule, Ernest B. Ludlam.

KING, REGINALD BENJAMIN, Lemsford, 52, Mostyn Road, Merton Park, Surrey. British. Student. B.Sc., London (Hons. Chem.), 1925. Two years' research to 1927, King's College, London. A.I.C. (*Signed by*) Samuel Smiles, A. J. Allmand, E. W. McClelland.

KITASATO, ZENJIRO, Chemical Department, The University, Manchester. Japanese. D.Sc., University of Tokyo. Have been engaged in research-work for eight years in Japan. Am now engaged at the University of Manchester under Professor R. Robinson, F.R.S. "Beiträge zur Kenntnis der Isochinolin-Alkaloide," *Acta Phytochimica (Japan)*, Vol. III, No. 2. (*Signed by*) Robert Robinson, Arthur Lapworth, H. Raymond Ing, Ernest Wignall.

KNY-JONES, FREDERIC GORONWY, 1, Linley Road, Bruce Grove, London, N. 17. British. Training for Secondary School teaching. B.Sc. (Second Class Honours Chemistry). (*Signed by*) J. R. Partington, E. E. Turner, F. E. King.

LAWRENCE, CYRIL DUNN, 46, Juer St., Park Rd., Battersea, S.W. 11.

British. Research Student at the Imperial College of Science and Technology B.Sc., London (Honours, Chemistry). (*Signed by*) E. H. Farmer, G. A. R. Kon, Arnold Stevenson.

LEVIN, BARNETT, 64, Pooles Park, Finsbury Park, N. 4. British. Organic Research Student. B.Sc., London, 1926. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, Arnold Stevenson.

LINSELL, RONALD HENRY, Bethany House School, Goudhurst, Kent. English. Science and Mathematics Master. B.Sc., London (Hons. Chemistry). As a teacher of Chemistry, I wish to keep up to date with present research, and prepare to do research of my own for further qualifications. (*Signed by*) J. R. Partington, E. E. Turner, A. Brewin.

MCBRIDE, JOHN, Uzina Sinimbri, São Miguel de Campos, Alagôas, Brazil. British. Analytical Chemist. Seven years in Laboratory of Messrs. John Walker & Co., Sugar Refiners, Greenock; 3½ years in laboratories of C.U.C.S., Pernambuco, Brazil; now head chemist to this company. (*Signed by*) Angus Smith, John Wm. Biggart, William M. Cumming.

MACDONALD, JAMES YOUNGER, 17, Learmonth Gardens, Edinburgh. British. Lecturer in Chemistry, University of St. Andrews (from August, 1927). B.A. (Nat. Sci., Oxon.). Three years as research student. *J.C.S.*, 1925, **127**, 2764. (*Signed by*) F. G. Donnan W. E. Garner, Henry Terrey.

MCNEIL, JAMES ERIC, "Claremont," Lake Road East, Cardiff. British. Colliery Chemist. At present Assistant to Tredegar Iron & Coal Co., Tredegar, Mon. B.Sc. (3rd Class Honours in Chemistry) in University of Wales. Long vacations of 1924 and 1925 spent in laboratory of Messrs. Treharne & Duncan, Cardiff. (*Signed by*) J. H. Duncan, A. A. Read, E. P. Perman.

MEHROTRA, MOOLRAJ, Chemistry Department, University of Allahabad, Allahabad. Indian. Demonstrator in Chemistry, University of Allahabad. B.Sc. and M.Sc. of the University of Allahabad. I have been on the staff of the University of Allahabad for four years and have contributed eight papers on Colloid Chemistry. Two of them are in the press, and the following six have been published: 1. "Adsorption von Saüren, Basen und Satzen, etc.," M. R. Mehrotra and N. R. Dhar (*Zeit. Anorg.*, Chemie Band 155). 2. "Die Stabilität Kolloidaler Lösungen, Pt. II," K. C. Sen and M. R. Mehrotra (*Zeit. Anorg. Chemie*, Band 142). 3. "Peptisation of Metallic Hydroxides in Presence of Sugars," M. R. Mehrotra and K. C. Sen (*J. Ind. Chem. Soc.*, 1927, **4**, 117). 4. "Simultaneous Adsorption of Ions from Solution, Pt. I, etc.," Moolraj Mehrotra and Kshitish Chandra Sen (*J. Ind. Chem. Soc.*, 1926, **3**, 297). 5. "Studies in Adsorption, Pt. XV," M. R. Mehrotra and N. R. Dhar (*J. Phys. Chem.*, 1926, **30**, 1185). 6. "Die peptisation von Eisen und Chromhydroxyd, etc.," M. R. Mehrotra and K. C. Sen (*Koll. Zeit.*, 1927, **42**, 35). (*Signed by*) F. G. Donnan, S. Barratt, Henry Terrey .

MEREDITH, DAVID OWEN, P.O. Box AA-B, Hobart, Tasmania. Australian. General Superintendent, Electrolytic Zinc Co. of Australasia, Ltd. In charge of Electrolytic Zinc Co. of Australasia's operations at Risdon, Tasmania, formerly as Deputy General Manager and now as General Superintendent. These works cover the electrolysis of zinc and cadmium, also production of sulphuric acid, nitric acid, and superphosphate. Member Australasian Institute of Mining and Metallurgy. Member American Institute of Mining and Metallurgical Engineers. Member Institution of Engineers (Australia). Member American Chemical Society. (*Signed by*) D. Avery, Gilbert Rigg, D. Orme Masson.

MILLARD, ARTHUR HEREWARD, 8, Westhall Rd., Park Lane, Bath. British. Lecturer at the Bath and West of England College of Chemistry and Pharmacy. Qualifying Examination of Pharmaceutical Soc., Jan. 5, 1925. Pharmaceuti-

cal Chemist Diploma, July 22, 1925. Three years student and 6 years as Demonstrator and Lecturer in Pharmaceutical Chemistry at The Bath and West of England College of Chemistry and Pharmacy. Desirous of keeping in touch with chemical research. (*Signed by*) David J. Williams, Arthur Marsden, P. J. Thompson.

MITCHELL, THOMAS, 2, Tufton St., Silsden, nr. Keighley, Yorks. British. Research Student. B.Sc., London (Hons.). A.R.C.S. (Hons.). (*Signed by*) G. A. R. Kon, W. E. Hugh, H. L. Riley.

MURAKAMI, SHINZO, Chemical Department, The University, Manchester. Japanese. Instructor in the Pharmaceutical College, Osaka (Japan). Have been engaged in research work for 10 years in Japan and now in the University of Manchester under Prof. R. Robinson. "On New Constituents of the Ava root" (*Journ. Pharm. Soc., Japan*, 1916, 1918). "On the Essential Oil of *Houttuynia cordata*, Thumb. (*ibid.*, in the press). (*Signed by*) Robert Robinson, Arthur Lapworth, H. Raymond Ing, Ernest Wignall.

NODZU, RYUZABURO, Chemical Department, The University, Manchester. Japanese. Assistant Professor of Organic Chemistry, Kyoto Imperial University, Japan. D.Sc., Kyoto Imperial University. Have engaged in research work under Prof. S. Komatsu. Joint author of the following papers: "Reaction between Aniline and Chloroacetic Acid," *Mem. Coll. Sci. Kyoto*, 1922, VI, 73; "Studies on Catalytic Action, I," *loc. cit.*, 1923, VI, 177; "On the Synthesis of Phosphoric Acid Esters, II," *loc. cit.*, 1924, VII, 377; "On the Chemistry of Japanese Plants, VII," *loc. cit.*, 1925, VIII, 223. Author of the following paper: "On the Synthesis of the Phosphoric Acid Esters, III," *J. Biochem.*, 1926, VI, 31. At present working under Prof. R. Robinson, F.R.S., at University of Manchester. (*Signed by*) Robert Robinson, Arthur Lapworth, Reginald C. Fawcett, H. Raymond Ing, Ernest Wignall.

OOMMEN, MARIAM PUTHENPARAMPIL, 59, Tregunter Road, West Brompton, London, S.W. 10. Indian. Lecturer in Chemistry, Women's Christian College, Madras, S. India. Now Research Student at Royal College of Science, London. B.A. (Hons.) Chemistry (Madras University), 1924. (*Signed by*) James C. Philip, M. A. Whiteley, B. B. Dey, Jocelyn Thorpe.

OSWALD, WILLIAM ALEXANDER HUGH, White Knights, St. George's Hill, Weybridge, Surrey. British. Technical Department, Anglo-American Oil Co., Ltd. B.A., Cambridge University, 1st Class Inorganic and Organic Chemistry, Physics, Industrial, Commercial, and Applied Chemistry. I have spent some time in the Imperial Oil Co. Refinery in Sarnia, Canada, chiefly in connection with "cracking" and vacuum distillation; also some months in the Research Laboratories of the Standard Oil Co. (N.J.) in connection with testing chemical substances for their "anti-knocking" properties when added to petrol; research on lubricating oils, fuel oils, and Diesel oils; vacuum distillation and vapour-phase "cracking." I spent a month in Dr. F. H. Garner's Laboratory at Fawley. (*Signed by*) C. I. Kelly, C. Chilvers, Walter A. Woodward.

PAVION, HARRY, 4, Brideoak St., Cheetham, Manchester. British. Chemist and Representative at Messrs. N. Taylor & Co., 105, Hulme Hall Lane, Miles Platting, Manchester. Associate of Pharmaceutical Society of Gt. Britain (1906–1912). Registered Medical Student at Victoria University, Manchester (1914–1919). Senior Sergt. Dispenser, R.A.M.C. (T.F.) at home and abroad, Field Ambulance and General Hospital. Late Managing Director to Messrs. Rubwel Co., Ltd., Manchester, Manufacturing Chemists, etc. (*Signed by*) H. Berry, Fred Fairbrother, J. E. Myers.

PERRINS, GORDON, Chemical Laboratory, Royal Infirmary, Edinburgh.

British. Chief Pharmacist to Royal Infirmary, Edinburgh. Manufacturing and Analytical Chemist, Teacher of Pharmacy. Pharmaceutical Chemist and Teacher of Chemistry. Occasional contributor to *Pharmaceutical Journal* on educational matters, in which I am particularly interested; late Secretary to Ipswich Pharmaceutical Association; Lecturer to Edinburgh Chemists' Association. (*Signed by*) Arthur W. Mann, J. F. Ward, J. Macvie Hill, D. Hughes, William Mair, H. P. Wilson.

PRASAD, MATA, Royal Institute of Science, Bombay, India. Indian. Professor in Inorganic and Physical Chemistry, Royal Institute of Science, Bombay (India). D.Sc. of Benares Hindu University. Published a number of papers in *Koll. Zeit.*, *Jour. Phys. Chem.*, *Zeit. physikal. Chem.*, and *Jour. Ind. Chem. Soc.* Working at present at Davy-Faraday Laboratory on crystal structure. Member of the Royal Institution. Published no paper in *J.C.S.* so far. (*Signed by*) W. E. Garner, Henry Terrey, L. F. Gilbert.

PRIDE, WILLIAM EMRYS, Imperial College Hostel, South Kensington, S.W. 7. British. Research Student. A.R.C.Sc., B.Sc. (Imperial College of Science and Tech., London). (*Signed by*) Jocelyn Thorpe, M. A. Whiteley, James C. Philip, R. F. Hunter.

RAO, BIJOOR SANJIVA, Bangalore. Hindu. Assistant Chemist, Department of Organic Chemistry, Indian Institute of Science, Hebbal, Bangalore. B.A. (Madras); Associate Indian Institute of Science; some time Assistant Lecturer, Central College, Bangalore; then Assistant Chemist, Mysore Govt. Sandalwood Oil Factory; from 1921 Assistant Chemist, Indian Institute of Science. Published following joint papers in the *Jour. Ind. Inst. Sci.*, "West Australian Sandalwood Oil," 1922, V, pt. 12; "Kochi Grass Oil," 1925, VIIIA, pt. 2; "Essential Oil of *Cyperus Rotundus*," 1925, VIIIA, pt. 4; "Notes on Indian Essential Oils," 1925, VIIIA, pt. 10; "Occurrence of Sylvestrene," 1925, VIIIA, pt. 14; "Essential Oils from *Kaempferia galanga*, *Curcuma aromatica*, and *Erythroxylon monogynum*," 1926, IXA, pt. 6. "The Occurrence of Sylvestrene," *J.C.S.*, 1925, **127**, 2494. (*Signed by*) J. L. Simonsen, Roland V. Norris, M. O. Forster.

RAYMOND, WALTER DESMOND, Chemical Laboratory, Baghdad. British by birth. Assistant Chemical Examiner to the Govt. of Iraq. Formerly student at Sir John Cass Technical Institute, Aldgate, E. Formerly Assistant to R. H. Ellis, Esq., F.I.C., F.C.S., at Olympia Oil and Cake Co., Ltd., Selby. B.Sc., London University. Lecturer in Chemistry to the Iraq School of Pharmacy. (*Signed by*) E. de Barry Barnett, J. W. Cook, Henry J. S. Sand.

RHYS-JONES, DAVID CLARENCE, 10, Berkley Av., Levershulme, Manchester. British. Research Student, Manchester University. B.Sc. (Wales). (*Signed by*) Frank Lee Pyman, Frederick A. Mason, John K. Wood, O. Rhys Howell.

ROBINSON, ALBERT ERNEST, 14, Brentwood Terrace, Armley, Leeds. English. Works Colour Chemist. Now Departmental Manager at Messrs. Wood & Bedford, Branch of the Yorkshire Dyeware & Chemical Co., Ltd. Matriculation, Northern Universities, 1917 (private study); Final Certificates in Wool and Cotton Dyeing, London Institute; Group Certificate of Leeds Technical College; Two years' Leather Manufacture and Analysis at University of Leeds; Eleven years as Works Colour Chemist. I wish to keep in touch with Chemical Research. (*Signed by*) Chas. S. Bedford, Ralph C. Storey, C. W. H. Story.

SATCHELL, RALPH DAVID, 26, Wilson St., London, S.W. 11. British. Student, Organic Research at Imperial College of Science and Technology. A.R.C.S., B.Sc. (Hons.). (*Signed by*) G. A. R. Kon, W. E. Hugh, J. C. Bardhan.

SCOTT, WILLIAM DALLAS, Eldercroft, Cassio Rd., Watford, Herts. British. Student. Diploma of the Associateship of the Royal College of Science and proceeding to higher degrees. (*Signed by*) G. A. R. Kon, Arnold Stevenson, M. A. Whiteley.

SOMERVILLE, IAN CAMPBELL, 319, Ryers Avenue, Cheltenham, Pa., U.S.A. British. Research Chemist. Graduated from Edinburgh University, B.Sc., 1st Class Hons. Chem., 1923. Assistant in Physical Chemistry in Edinburgh University, 1923–25. Thesis accepted for Ph.D., July, 1926. Jointly with Dr. J. D. M. Ross, *J.C.S.*, 1926, 2770. "Melting-point Curves of Optical Isomerides in the Camphor Series." (*Signed by*) James Walker, John D. M. Ross, Alex. McKenzie.

STEVENS, ARTHUR HAROLD, Tower House, Wokingham Road, Reading (Berks.). British. Chartered Patent Agent. B.Sc. (in Chemistry, Physics, and Maths. at London University). Passed Final Exam. for Assoc. Mem. Inst. C.E., taking Metallurgy as one subject. Have obtained patents on many chemical inventions for clients, including 155092 (water softening); 120381 (arsenical compounds); 249172 (rubber substitutes); 249526 (azo-dyes); 217391 (lead refining); 273017 (pigments); 275328 (yeast). (*Signed by*) H. Harris, S. Judd Lewis, J. N. Goldsmith.

TODD, HORATIO, Bromleigh, Sandown Road, Knock, Belfast. British. Pharmaceutical Chemist. President Pharmaceutical Soc., Northern Ireland. Licentiate and Member Pharmaceutical Society of Ireland. Member, ex-Committee, British Pharmaceutical Conference. Ex-President North Irish Pharmacists Assoc. (2 years). Desirous of admission to the Society in order to keep in touch with current advances in chemistry, particularly in relation to pharmacy and medicine. No published papers in Journals of Chemistry. (*Signed by*) Henry Wren, Theo. Harper, Chas. J. Still, William Macartney.

WALTON, ROBERT, The Mill House, Langford, Malden, Essex. British. Chemist to Southend Waterworks Co. Student of Chemistry desirous of using the library and receiving the Journal. (*Signed by*) P. C. L. Thorne, E. de Barry Barnett, J. W. Cook.

WARREN, FRANK LOUIS, 5, Maitland Park Villas, Haverstock Hill, Hampstead, N.W. 3. British. Research Student. B.Sc. (Imperial College of Science and Technology, London), A.R.C.S. (*Signed by*) Jocelyn Thorpe, M. A. Whiteley, James C. Philip.

WILSON-SMITH, MARJORIE JENNET, 90, Queen Alexandra Mansions, Judd Street, London, W.C. 1. British. Research Student, Organic Chemistry Dept., Imperial College of Science and Technology. B.Sc. (London), Royal Holloway College, Englefield Green, Surrey. 1. Lindley Studentship in Physiology, London University, 1922–23. 2. Demonstrator in Chemistry, London School of Medicine for Women, 1921–22 and 1923–25. (*Signed by*) M. A. Whiteley, Jocelyn Thorpe, E. H. Farmer, G. A. R. Kon.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

LEECH, PAUL NICHOLAS, American Medical Association, 535, N. Dearborn St., Chicago, Ill., U.S.A. Born in U.S.A. Director Chemical Laboratory, Amer. Med. Assoc. A.B. Miami Univ.; Sc.M. Univ. of Chicago; Ph.D. Univ. of Chicago. Various articles in Chemical and Medical Literature since 1913. Articles have been published in *J. Am. Chem. Soc.* (with J. Stieglitz), *Industrial and Engineering Chemistry*, *J. Am. Pharm. Assoc.*, and *J. Am. Med. Assoc.* Have also written many unsigned articles and editorials principally in *J. Am. Med. Assoc.* Chairman Chicago Section of the American

Chem. Soc., 1926–27. Assoc. Fellow American Med. Assoc. (*Signed by*) A. H. Clark.

RUFF, OTTO, Dr.phil., Dr.Ing.Eh., Breslau (Germany), Borsigstrasse 23. German. Direktor des anorganisch chemischen Instituts der technischen Hochschule. Dr.phil. (Berlin, Universit.); Dr.Ing.ehrenheilber (Dresden, technissche Hochschule). Berichte der Deutschen Chem. Ges.; Zeits. f. Anorgan. Chemie, Elektrochemie, Angewandte Chemie, Colloidchemie. (*Signed by*) E. F. Armstrong.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

CRANE, E. J., and PATTERSON, AUSTIN MCDOWELL. A guide to the literature of chemistry. New York 1927. pp. xii + 438. ill. (*Reference.*) $5. net. From the Authors.

CRIPPS, ERNEST CHARLES. Plough Court: the story of a notable pharmacy, 1715–1927. London 1927. pp. xviii + 228. ill. From Messrs. Allen & Hanburys.

INSTITUTE OF FUEL. Proceedings, Vol. I, No. 1. London 1927. pp. iv + 112. ill. From the Institute.

PILCHER, RICHARD BERTRAM. The profession of chemistry. Revised edition. London 1927. pp. x + 94. (*Recd.* 17/11/27.) From the Institute of Chemistry.

SIDGWICK, NEVIL VINCENT. The electronic theory of valency. Oxford 1927. pp. xii + 310. 15*s.* net. (*Recd.* 11/11/27.) From the Author.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. V. Part iii. Berlin 1927. pp. 529 to 752. *M.* 10. (*Recd.* 7/11/27.) From the Publishers: Herren Urban & Schwarzenberg.

II. *By Purchase.*

BERTHELOT, MARCELIN. *See* BOUTARIC, AUGUSTIN.

BONE, WILLIAM ARTHUR, and TOWNEND, DONALD THOMAS ALFRED. Flame and combustion in gases. London 1927. pp. xvi + 548. ill. 32*s.* net. (*Recd.* 24/10/27.)

BORN, MAX. The mechanics of the atom. Translated by J. W. FISHER and revised by D. R. HARTREE. London 1927. pp. xvi + 318. ill. 18*s.* net. (*Recd.* 21/10/27.)

BOUTARIC, AUGUSTIN. Marcelin Berthelot (1827–1907). Paris 1927. pp. 220. ill. 15 *fr.* net. (*Recd.* 14/11/27.)

BUTLER, JOHN ALFRED VALENTINE. The chemical elements and their compounds: an introduction to the study of inorganic chemistry from modern standpoints. London 1927. pp. xii + 206. ill. 6*s.* net. (*Recd.* 21/10/27.)

CROCKER, JAMES CODRINGTON, and MATTHEWS, FRANK. Theoretical and experimental physical chemistry. London 1927. pp. viii + 582. ill. 21*s*. net. (*Recd.* 18/11/27.)

EDWARDS, JUNIUS DAVID. Aluminium bronze powder and aluminium paint. New York 1927. pp. 104. ill. 12*s*. 6*d*. net. (*Recd.* 24/10/27.)

ERDMANN, ERNST, and DOLCH, M. Die Chemie der Braunkohle. 2nd edition. Halle (Saale) 1927. pp. xiii + 289 + 321. ill. *M*. 42. (*Recd.* 9/11/27.)

FOX, CYRIL S. Bauxite: a treatise discussing in detail the origin, constitution, known occurrences, and commercial uses of bauxite; and including particulars regarding the present condition of the aluminium industry and the peculiar importance of cryolite in the extraction of aluminium from bauxite. London 1927. pp. xii + 312. ill. 30*s*. net. (*Recd.* 21/10/27.)

GARZULY, R. Organometalle. (Sammlung Vol. XXIX.) Stuttgart 1927.

GREEN, JOHN WILFRID, and RIDLEY, CHARLES NORMAN. The science of roadmaking. London 1927. pp. xvi + 138. ill. 10*s*. 6*d*. net. (*Recd.* 21/10/27.)

HANDBUCH DER KOLLOIDWISSENSCHAFT IN EINZELDARSTELLUNGEN. Edited by WOLFGANG OSTWALD. Vol. II. Kolloidchemie der Stärke. By MAXIMILIAN SAMEC. Dresden 1927. pp. xix + 509. ill. *M*. 32. (*Recd.* 2/11/27.)

HAUSER, ERNST A. Latex. Sein Vorkommen, seine Gewinnung, Eigenschaften sowie technische Verwendung. Mit einem Anhang: Patentübersicht, bearbeitet von CARL BOEHM VON BOERNEGG. Dresden 1927. pp. xii + 231. ill. *M*. 17.50. (*Recd.* 2/11/27.)

HILDITCH, THOMAS PERCY. The industrial chemistry of the fats and waxes. London 1927. pp. xvi + 462. 18*s*. net. (*Recd.* 21/10/27.)

HÜCKEL, WALTER. Der gegenwärtige Stand der Spannungstheorie. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XIX.) Berlin 1927.

LESSHEIM, HANS, and SAMUEL, RUDOLF. Die Valenzzahl und ihre Beziehungen zum Bau der Atome. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XIX.) Berlin 1927.

LORENZ, RICHARD, and KAUFLER, FELIX. Elektrochemie geschmolzener Salze. Leipzig 1909. pp. vi + 84. ill. *M*. 3.50. (*Recd.* 3/11/27.)

MOSS, KENNETH NEVILLE. Gases, dust and heat in mines. London 1927. pp. xii + 233. ill. 12*s*. 6*d*. net. (*Recd.* 21/10/27.)

NEW YORK STATE. *Department of Health.* Standard methods of the Division of Laboratories and Research: general laboratory procedures and the methods used. [Baltimore, Md.] 1927. pp. xx + 704. ill. 34*s*. net. (*Recd.* 18/11/27.)

OPPENHEIMER, CARL. Die Fermente und ihre Wirkungen. 5th edition. Vol. iii. Die Methodik der Fermente. Edited by CARL OPPENHEIMER and LUDWIG PINCUSSEN. Part I, etc. Leipzig 1927 +.

PAINTON, EDGAR THEODORE. The working of aluminium. London 1927. pp. x + 214. ill. 13*s*. 6*d*. net. (*Recd.* 18/11/27.)

RIES, HEINRICH. Clays: their occurrence, proper ties, and uses 3rd edition. New York 1927. pp. viii + 614. ill. 35*s*. net. (*Recd.* 18/11/27.)

STEWART, ALFRED WALTER. Recent advances in organic chemistry. 5th edition. 2 vols. London 1927. pp. xiv + 387, xiv + 382. ill. 42*s*. net. (*Recd.* 24/10/27.)

TAYLOR, HUGH STOTT. Elementary physical chemistry. Adapted from "A treatise on physical chemistry." New York 1927. pp. x + 532. ill. 16*s*. net. (*Recd.* 24/10/27.)

THORNTON, WILLIAM M., *jun.* Titanium: with special reference to the analysis of titaniferous substances. New York 1927. pp. 262. ill. 21*s*. net. (*Recd.* 24/10/27.)

WAGGAMAN, WILLIAM H., and EASTERWOOD, HENRY W. Phosphoric acid, phosphates, and phosphatic fertilizers. New York 1927. pp. 370. ill. 31*s*. 6*d*. net. (*Recd.* 24/10/27.)

WAKSMAN, SELMAN A. Principles of soil microbiology. [Baltimore, Md.] 1927. pp. xxviii + 898. ill. 45*s*. net. (*Recd.* 18/11/27.)

WALKER, SIR JAMES. Introduction to physical chemistry. 10th edition. London 1927. pp. xii + 446. ill. 16*s*. net. (*Recd.* 18/11/27.)

WEBB, E. T. Soap and glycerine manufacture. London 1927. pp. xii + 224. ill. 25*s*. net. (*Recd.* 21/10/27.)

WEIGERT, FRITZ. Optische Methoden der Chemie. Leipzig 1927. pp. xvi + 632 + xvi. ill. *M*. 38. (*Recd.* 31/10/27.)

WIESNER, JULIUS VON. Die Rohstoffe des Pflanzenreichs. 4th edition. Edited by PAUL KRAIS and WILHELM VON BREHMER. Vol. I. Leipzig 1927. pp. iv + 1122. ill. (*Reference.*) *M*. 49.

WINTERSTEIN, ERNST, and TRIER, GEORG. Die Alkaloide. Eine Monographie der natürlichen Basen. 2nd edition. By GEORG TRIER. Teil I. Berlin 1927. pp. 356. *M*. 18. (*Recd.* 31/10/27.)

III. *Pamphlets.*

AERONAUTICAL RESEARCH COMMITTEE. Reports and Memoranda. No. 1062. Dopes and detonation. 2nd report. By HUGH LONGBOURNE CALLENDAR. London 1927. pp. 31. ill.

ALBERTA. *Scientific and Research Council.* Report No. 18. The bituminous sands of Alberta. By K. A. CLARK and S. M. BLAIR. Edmonton 1927. pp. x + 74. ill.

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Bulletin No. 31. Newsprint: preliminary experiments on the grinding of immature eucalypts for mechanical pulp and possibilities of manufacturing newsprint in Australia. By L. R. BENJAMIN. Melbourne 1927. pp. 37. ill.

—— —— Bulletin No. 32. A survey of the tanning materials of Australia. By D. COGHILL. Melbourne 1927. pp. 136.

—— —— Bulletin No. 33. The possibilities of power alcohol and certain other fuels in Australia. By G. A. COOK. Melbourne 1927. pp. 106.

—— —— Circular No. 9. Preliminary report on the treatment of redgum or marri kino (*Eucalyptus calophylla*) for the preparation of tannin extract. By D. COGHILL. Melbourne 1927. pp. 14.

BARYSCHEVA, ELISABETH. Uber die Synthese der Geschmacksempfindungen. (From *Pflügers Archiv*, 1926, **215**.)

BOARD OF EDUCATION. Report of H.M. inspectors on the provision of instruction in pure chemistry in technical colleges and schools in England. London 1927. pp. 11.

BRITISH RESEARCH ASSOCIATION FOR THE WOOLLEN AND WORSTED INDUSTRIES. An outline of its activities. By SYDNEY GEORGE BARKER and ARNOLD FROBISHER. Leeds 1927. pp. iv + 47. ill.

COLLINS, W. D. The radioactivity of natural waters. (From the *U.S. Public Health Reports*, 1926, **41**.)

FORD, WILLIAM EBENEZER. Studies in the calcite group. (From the *Trans. Conn. Acad. Arts Sci.*, 1917, **22**.)

GREENBURG. LEONARD. Benzol poisoning as an industrial hazard. (From the *U.S. Public Health Reports*, 1926, **41**.). ill.

HENDRICK. JAMES. The evolution of the fertiliser industry. (From the *Trans. Highland & Agric. Soc. Scotland*, 1927.)

HUME, WILLIAM FRASER. The nitrate shales of Egypt. (From the *Mem. Inst. Égyptien*, 1915, **8**.)

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND. Fire risks in industry. By ALEC MUNRO CAMERON. London 1927. pp. 21.

—— The growth of the profession of chemistry during the past half-century (1877—1927). By ALFRED CHASTON CHAPMAN. London 1927. pp. 23.

LINDEN, B. A., TURNER, W. R., and THOM, CHARLES. Food poisoning from a streptococcus in cheese. (From the *U.S. Public Health Reports*, 1926, **41**.)

MIALL, STEPHEN. Chemical reflections. London 1927. pp. 39.

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 1. Memorandum on explosives for use in fiery and dusty mines, and the methods of testing them. By the Explosives in Mines Research Committee. London 1923. pp. 12.

—— —— Paper No. 2. The application of stone dust in coal mines. [By ALLAN GREENWELL.] London 1923. pp. 58. ill.

—— —— Paper No. 3. Coal dust explosions, Eskmeals, 1923 : a descriptive account. By RICHARD VERNON WHEELER. London 1924. pp. 29. ill.

—— —— Paper No. 4. First report of the Explosives in Mines Research Committee, 1922—1923. London 1924. pp. 12.

—— —— Paper No. 5. Flame-proof electrical apparatus for use in coal mines. First report—flange protection. By IRA CECIL FRANK STATHAM and RICHARD VERNON WHEELER. London 1924. pp. 50. ill.

—— —— Paper No. 6. The support of underground workings in the South Wales coalfield. (A report of the Support of Workings in Mines Committee.) London 1925. pp. 15.

—— —— Paper No. 35. Flame-proof electrical apparatus for use in coal mines. Third report—ring-relief protection. By H. RAINFORD and RICHARD VERNON WHEELER. London 1927. pp. 21. ill.

—— —— Paper No. 36. The ignition of gases by hot wires. By W. C. F. SHEPHERD and RICHARD VERNON WHEELER. London 1927. pp. 26. ill.

PENFOLD, ARTHUR RAMON. Tung oil (Chinese wood oil) from Australian grown trees of *Aleurites Fordii* (Hemsley). (*Sydney Technological Museum Bulletin No.* 12.) Sydney 1926. pp. 9.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Building Research.* Special Report No. 8. Fire-resistant construction. By REGINALD EDWARD STRADLING and FRANK LAWRENCE BRADY. London 1927. pp. vi + 57. ill.

—— *Chemistry Research.* Special Report No. 1. The production of formaldehyde by oxidation of hydrocarbons. By WILFRID LEDBURY and ETHELBERT WILLIAM BLAIR. London 1927. pp. iv + 54. ill.

—— *Engineering Research.* Special Report No. 2. Properties of materials at high temperatures. II. Mechanical properties of 0·51 per cent. carbon steel, and 0·53 per cent. carbon cast steel. By H. J. TAPSELL and W. J. CLENSHAW. London 1927. pp. iv + 16. ill.

ECHNOLOGY DEPT.

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PROCEEDINGS
OF THE
CHEMICAL SOCIETY.

Lecture held at Burlington House on Thursday, November 24th, 1927, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair.

Professor W. A. Bone, F.R.S., delivered his Lecture, entitled "Gaseous Combustion at High Pressures." A vote of thanks to the Lecturer, proposed by Sir Robert Robertson, K.B.E., F.R.S., and seconded by Professor J. F. Thorpe, C.B.E., F.R.S., was carried with acclamation, Professor Bone making acknowledgment.

Ordinary Scientific Meeting, Thursday, December 1st, 1927, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death on September 9th, of Hermann Kast, who was elected a Fellow on December 2nd, 1926.

It was announced that it had been arranged for Fellows of the Society to obtain the publications of the Dutch Chemical Society at the following reduced rates:

"Chemisch Weekblad"	Dutch Fl. 10 per annum (Regular price, Dutch Fl. 15).
"Recueil des travaux chimique des Pays-Bas"	Dutch Fl. 11.50 per annum (Regular price, Dutch Fl. 16.50).

Application should be made by Fellows direct to Dr. A. D. Donk, Secretary, Nederlandsche Chemische Vereeniging, Verspronckweg 100, Haarlem, Holland.

C. Chilvers was formally admitted a Fellow of the Chemical Society.

Certificates were read for the first time in favour of:

Basil Butterworth, B.Sc., 6, Belgrave Road, Wanstead, E. 11.
Jessie Cattermole, 207, Norbury Crescent, S.W. 16.
Moses Leverock Crossley, 734, Park Avenue, Plainfield, N.J., U.S.A.

Edgar Beattie Grant, 7, Alexandra Place, Jesmond, Newcastle-on-Tyne.
Thomas Hagyard, B.Sc., 3, Station Road, Eaglescliffe S.O., co Durham.
Miriam Ivy Horton, 59, Ingleby Road, Ilford.
Lilian Gertrude Thomerson, B.Sc., 134, Colchester Road, Leyton, E. 10.
Vera Millicent Thorn, B.Sc., 37, Steade Road, Sheffield.
Gladys Irene Sharp, 34, Woodhouse Road, Leytonstone, E. 11.
Richard Whittam, 120, Walmersley Road, Bury.

Dr. P. C. Austin and Dr. H. Hunter were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected :

Stanley Birks, M.A.
George Edward Kevin Blythe, B.Sc., Ph.D.
Charles Nightingale Clay, B.Sc., A.I.C.
William Ernest Cooper.
Philip Dalton Coppock, B.Sc., M.Sc.Tech.
Benjamin John Corder, B.A.
Eustace Nevill Eccott, B.Sc., A.R.C.S.
Herbert England.
Stephen de Finaly.
Robert Railton Fitzgerald.
Horace Leonard Gerry.
Thomas Joseph Glover, M.Sc., Ph.D.
Charles Robert Harington, M.A., Ph.D.
Edgar Albert Hayman.
Herbert Richard Hussey.
Albert William Kemp Ingram, B.A.
John William Thomas Jones, A.R.C.S.
Robert Napier Kerr, B.Sc., Ph.D.
Reginald Benjamin King, B.Sc., A.I.C.
Zenjiro Kitasato, D.Sc.
Frederick Goronwy Kny-Jones, B.Sc.
Cyril Dunn Lawrence, B.Sc.
Paul Nicholas Leech, A.B., Sc.M., Ph.D.
Barnett Levin, B.Sc.
Ronald Henry Linsell, B.Sc.
John McBride.
James Younger Macdonald, B.A.
James Eric McNeil, B.Sc.
Moolraj Mehrotra, M.Sc.
David Owen Meredith.
Arthur Hereward Millard.
Thomas Mitchell, B.Sc., A.R.C.S.
Shinzo Murakami.
Ryuzaburo Nodzu, D.Sc.
Mariam Puthenparampil Oommen, B.A.
William Alexander Hugh Oswald, B.A.
Harry Pavion.
Gordon Perrins.
Mata Prasad, D.Sc.
William Emrys Pride, B.Sc., A.R.C.S.
Bijoor Sanjiva Rao, B.A.
Walter Desmond Raymond.
David Clarence Rhys-Jones, B.Sc.
Albert Ernest Robinson.
Otto Ruff, Dr.Phil., Dr.Ing.Eh.
Ralph David Satchell, B.Sc., A.R.C.S.
William Dallas Scott, A.R.C.S.
Ian Campbell Somerville, B.Sc., Ph.D.
Arthur Harold Stevens, B.Sc.
Horatio Todd.
Robert Walton.
Frank Louis Warren, B.Sc., A.R.C.S.
Marjorie Jennet Wilson-Smith, B.Sc.

The following papers were read :

"Action of Beckmann's chromic acid mixture on some monocyclic terpenes." By T. A. Henry and H. Paget.

"The condensation of glyoxalines with formaldehyde." By R. Grindley and F. L. Pyman.

"Glyoxaline-4(5)-formaldehyde." By W. Hubball and F. L. Pyman.

"Studies of dynamic isomerism. Part XXVI. Consecutive changes in the mutarotation of galactose." By G. F. SMITH and T. M. LOWRY.

"Triazole compounds. Part II. Methylation of some 1-hydroxy-1 : 2 : 3-benztriazoles." By O. L. BRADY and C. V. REYNOLDS.

"The reaction between diaryloxy*iso*propyl alcohols and phosphorus oxychloride in the presence of pyridine." By D. R. BOYD and D. E. LADHAMS.

The Council has made the following Grants from the Research Fund:

	£	*s.*	*d.*
Constitution of iridin and irigenin. W. Baker. (Oxford Univ.)	7	0	0
The chemistry of Balbiano's acid. J. C. Bardhan (Imperial Coll.)	9	0	0
Constitution of columbin. W. Blakey. (Cambridge Univ.) ...	4	0	0
Organic compounds of arsenic. A. Brewin. (E. London Coll.)	7	0	0
Synthetical experiments in connexion with the alkaloids and related substances. R. K. Callow. (Oxford Univ) ...	7	0	0
Constitution of the disaccharides. W. Charlton. (Birmingham Univ.)	7	0	0
Catalytic effects produced by acids and salts (*contd.*). H. M. Dawson. (Leeds Univ.)	9	0	0
Determination of oxygen content in wrought iron and steel. C. H. Desch and H. H. Rains. (Sheffield Univ.)	9	0	0
Tautomerism of ketones of the type *cyclo*hexanylacetone (*contd.*). A. H. Dickins. (Imperial Coll.)	7	0	0
Three-carbon tautomerism. E. N. Eccott. (Imperial Coll.) ...	7	0	0
(*a*) Synthesis of *iso*indole. (*b*) Fission of sulphones with alkalis. G. W. Fenton. (Leeds Univ.)	14	0	0
Constitution of morphine. J. D. Fulton. (Manchester Univ.)...	7	0	0
Quasi-aromatic structures (*contd.*). F. R. Goss. (Leeds Univ.)	14	0	0
Relative directive powers of the halogens. L. G. Groves. (E. London Coll.)	4	0	0
Relative effects of the *meta*-orienting groups. H. C. Gull. (E. London Coll.)	4	0	0
Experiments on alkaloids and related substances. J. M. Gulland. (Oxford Univ.)	7	0	0
Properties of ω-bromoquinaldines, etc. D. L. Hammick. (Oxford Univ.	7	0	0
Constitution of carbohydrates. H. A. Hampton. (Birmingham Univ.)	7	0	0
Study of electrolytes in non-aqueous solutions. F. S. Hawkins. (E. London Coll.)	9	0	0
Influence of the solvent on reaction velocity in its bearing on the quantum theory. F. W. Hodges. (Chelsea Polytechnic)...	4	0	0
Reaction products of benzoyl chloride and benzoic anhydride with indigo. E. Hope. (Oxford Univ.)	7	0	0
Studies in azo- and azoxy-compounds. Miss M. I. Horton. (E. London Coll.)	4	0	0

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Three-carbon tautomerism in unsaturated nitriles. A. Kandiah. (Imperial Coll.)	7	0	0
Solvent effect on velocity of reaction. R. N. Kerr. (Bedford Coll.)	9	0	0
Properties of conjugated compounds. C. D. Lawrence. (Imperial Coll.)	7	0	0
Constitution of carbohydrates. A. Learner. (Birmingham Univ.)	7	0	0
Re-examination of certain large ring compounds. R. J. W. Le Fèvre. (Univ. Coll., London)	4	0	0
Synthesis and properties of symmetrically substituted diaryl hydrocarbons. A. W. Leonard. (E. London Coll.) ...	4	0	0
Effect of substituents on the formation of coumarin derivatives. A. B. E. Lovett. (E. London Coll.)	4	0	0
Synthesis of the compounds produced by the condensation of fluorene with acetone. P. Maitland. (Glasgow Univ.) ...	4	0	0
Competitive substitution effects in the benzene nucleus. H. A. Mayes. (E. London Coll.)	7	0	0
Comparison of thallium and dialkyl thallium salts with each other and with salts of the alkali metals. R. C. Menzies. (Bristol Univ.)	14	0	0
Three-carbon tautomerism. T. Mitchell. (Imperial Coll.) ...	7	0	0
Structure of carbohydrates. T. H. Morton. (Birmingham) ...	7	0	0
Stereoisomerism in polycyclic systems. S. G. P. Plant. (Oxford Univ.)	11	0	0
Heat of adsorption of oxygen on charcoal. E. K. Rideal and A. F. H. Ward. (Cambridge Univ.)	9	0	0
Condensation reactions of γ-diketones. E. Roberts. (E. London Coll.)	4	0	0
Syntheses of certain glucosides, and derivatives of certain hydroxy-acids. A. Robertson. (Manchester Univ.) ...	19	0	0
Mobility of three-carbon tautomeric systems. E. Rothstein. (Leeds Univ.)	19	0	0
Equilibrium mixtures of unsaturated methyl ketones. R. D. Satchell. (Imperial Coll.)	7	0	0
Properties of cyclic unsaturated acids. W. D. Scott. (Imperial Coll.)	7	0	0
Nitration of ethylbenzene and related substances. E. A. Seeley. (Derby Tech. Coll.)	7	0	0
Depression of orienting influences by substitution. Miss G. I. Sharp. (E. London Coll.)	4	0	0
Comparative velocities of nitration of ω-substituted toluenes. Miss F. R. Shaw. (Leeds Univ.)	7	0	0
Reactivity of halogens in halogenated derivatives of naphthalene. J. B. Shoesmith. (Edinburgh Univ.)	7	0	0
Oxide-ring structure of sugars. J. A. B. Smith. (Birmingham Univ.)	7	0	0
Singlet linkages in co-ordination and molecular compounds. S. Sugden. (Birkbeck Coll.)	9	0	0
Asymmetric organo-metallic derivatives. Miss L. G. Thomerson. (E. London Coll.)	4	0	0
Preparation of mono-substituted derivatives of piperazine, etc. Miss V. M. Thorn. (Sheffield Univ.)	4	0	0

	£	s.	d.
Conversion of aromatic amines into quinolines. E. E. Turner. (E. London Coll.)...	4	0	0
Nitration of *meta*-dihalogenobenzenes. C. C. N. Vass. (Leeds Univ.)	7	0	0
Synthetical experiments on the constitution of alkaloids. C. J. Virden. (Oxford Univ.)	7	0	0
Formation of large-membered rings. I. Vogel. (Imperial Coll.)	9	0	0
Chemistry of molybdenum and allied elements. W. Wardlaw. (Birmingham Univ.)	9	0	0
Investigations of sterols from *Arnica* root and from *Ononia spinosa* root. W. A. Waters. (Cambridge Univ.)	7	0	0
Bromination of acetyl bromide. H. B. Watson. (Univ. Coll., Bangor)	4	0	0
Constitution of carbohydrates. J. I. Webb. (Birmingham Univ.)	7	0	0
Laws governing substitution in the hydrazine molecule. J. Wilson. (Regent St. Polytech.)	4	0	0
Effect of *gem*-dialkyl groups on the formation and stability of the anhydrides of dicarboxylic acids. Miss M. J. Wilson-Smith. (Imperial Coll.)	9	0	0
	£434	0	0

List of Papers, or Abstracts thereof, received between November 17th and December 1st, 1927. This List does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.

"Nor-*d*-ψ-ephedrine, an alkaloid from *Ephedra* species." By S. Smith.

"The alkaline hydrolysis of the nitro-ω-bromostyrenes and the nitro-ω-chlorostyrenes." By A. T. Dann, A. Howard, and W. Davies.

"The bromination of *m*-methoxycinnamic acid." By H. Davies and W. Davies.

"On Haber's glass cell." By W. S. Hughes.

"The resolution of externally compensated *p*-nitrobenzoylalanine." By W. M. Colles and C. S. Gibson.

"Studies in adjacent substitution. Part I. Some reactions of 3-chloro-2-aminoanisole." By H. H. Hodgson and A. Kershaw.

"The stereochemistry of reduced quinoxalines. Part III. The resolution of externally compensated α- and β-2 : 3 : 7-trimethyl-1 : 2 : 3 : 4-tetrahydroquinoxalines." By C. S. Gibson, J. H. Nutland, and J. L. Simonsen.

"Studies in halogen compounds. Part I. The mechanism of activation of halogen atoms by the nitro-group. The relative reactivities of halogen atoms present in aromatic compounds." By A. Brewin and E. E. Turner.

"The migration of the acyl group in partially acylated phenolic compounds. Part II." By A. G. PERKIN and R. C. STOREY.

"The condensation of hexahydrobenzaldehyde and malonic acid." By S. S. G. SIRCAR.

"The salting-out effect. Influence of electrolytes on the solubility of *m*-cresol in water." By J. S. CARTER and R. K. HARDY.

"The cyanine dyes. Part X. The constitution of the *apo*-cyanines." By W. H. MILLS and H. G. ORDISH.

ANNUAL REPORTS ON THE PROGRESS OF CHEMISTRY

Fellows are reminded that application for the Annual Reports for 1927, Vol. XXIV, at 5*s*. 6*d*. per copy should be received by Mr. S. E. Carr without delay. Applications must be accompanied by a remittance for 5*s*. 6*d*.

ADDITIONS TO THE LIBRARY

I. *Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. I. Chemische Methoden, Teil 11, Heft iii. Berlin 1927. pp. 217 to 632. ill. *M*. 22. (*Recd*. 7/12/27.)
From the Publishers: Herren Urban & Schwarzenberg.

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—— —— —— Scientific Paper No. 551. Absorption spectra of iron, cobalt, and nickel. By W. F. Meggers and F. M. Walters, *jun.* Washington 1927. ill.

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BUNKER, HENRY JAMES. *See* THAYSEN, AAGE CHRISTIAN.

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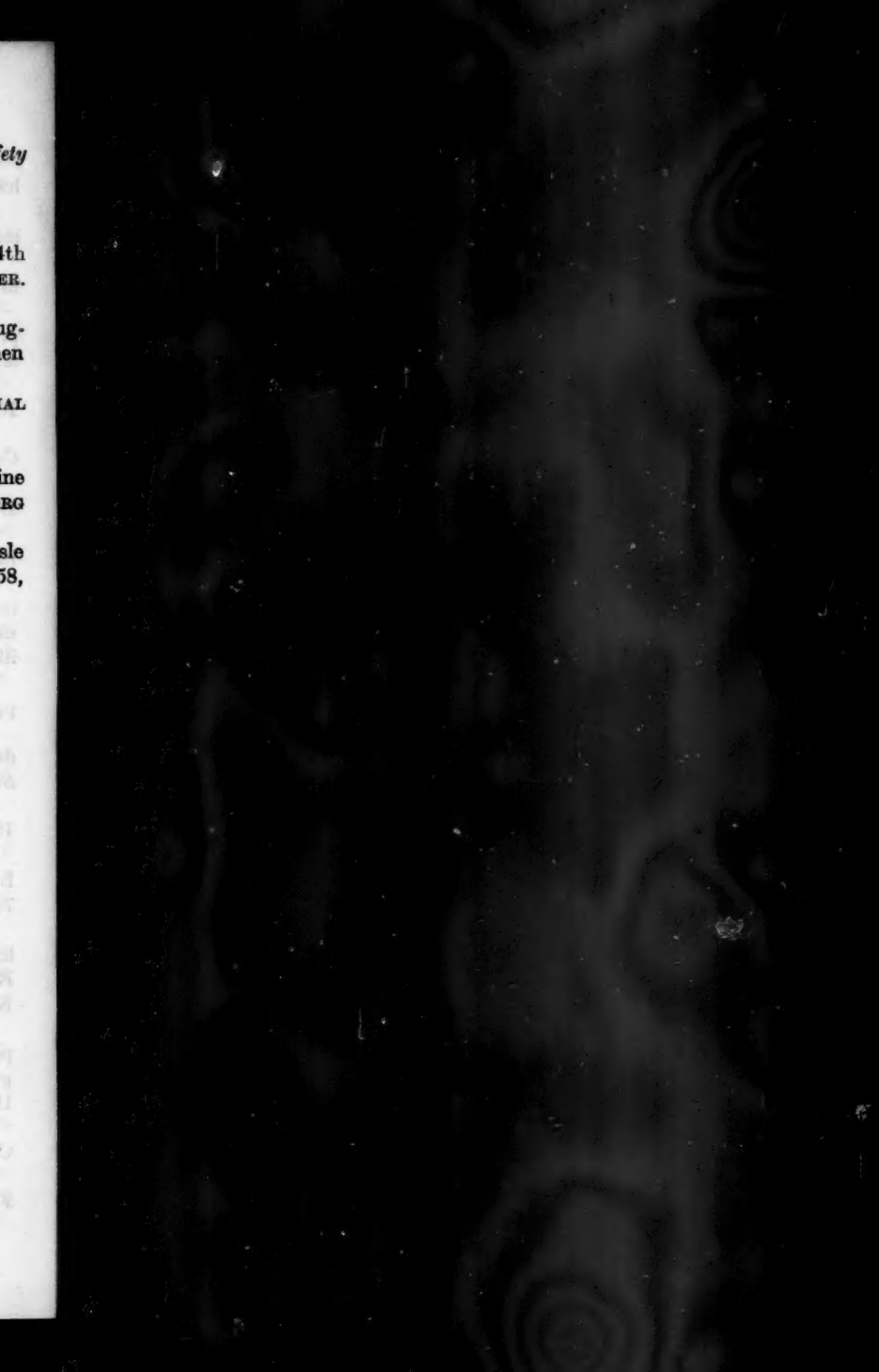
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